Title: Stream flow records for the water year 1922 / 1923

Place of Publication: Harrisburg, Pa.

Copyright Date: 1922 / 1923

Master Negative Storage Number: MNS# PSt SNPaAg106.2

COMMONWEALTH OF PENNSYLVANIA

DEPARTMENT OF FORESTS AND WATERS

Water Resources Service

STREAM FLOW RECORDS

For the Water Year

OCTOBER 1, 1922, TO SEPTEMBER 30, 1923

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STREAM FLOW RECORDS

OF

PENNSYLVANIA

FOR THE

WATER YEAR OCTOBER 1, 1922, TO SEPTEMBER 30, 1923

STREAM GAGING, FLOOD WARNING AND PRECIPITATION

This volume, containing records for the year ending September 30, 1923, is the second of a series of publications presenting stream flow records of Pennsylvania to be issued under separate cover. All previous records may be found in the Stream Flow Records of Pennsylvania for 1922 and the Annual Reports of the Water Supply Commission of Pennsylvania for the years 1910-1921.

STREAM GAGING

At the beginning of the year eighty-nine stations were being maintained; one old station was reestablished and sixteen were discontinued, leaving seventy-four in operation at the end of the year.

The station on the Schuylkill River at Conshohocken was discontinued on December 31, 1922; the Frankstown Branch Juniata River station at Huntingdon on February 3, 1923; the West Branch Susquehanna River station at Jersey Shore on March 31, 1923; the Clarion River station near Clarion on June 30, 1923, and the one on Loyalhanna Creek at New Alexandria on July 16, 1923. The station on Tionesta Creek at Butler Bridge was discontinued on August 4, 1923, and the old station, on the stream, at Nebraska was reestablished on August 5, 1923. The stations on Little Shenango River at Greenville; Pymatuning Creek near Orangeville; Neshannock Creek at Eastbrook Station; French Creek as Carlton; Youghiogheny River at Friendsville, Md.; those on the West Branch Susquehanna River at Clearfield, Lock Haven and Lewisburg; Driftwood Branch Sinnemahoning Creek at Driftwood and on Codorus Creek at York were discontinued on August 31, 1923.

This volume contains detailed hydrographic data for ninety stations. Of these, nine were maintained in the Susquehanna Basin for Flood Warning Service and one in the Ohio Basin as a check on other stations on the stream.

There has not been a sufficient number of current meter discharge measurements made at seven of the stations for a satisfactory determination of daily discharge and at seven other stations unsatisfactory conditions and changes in control section prevented a satisfactory rating. For these stations, daily gage heights and discharge measurements are published. The same data are also given for the remaining sixty-six stations, together with tables of daily and monthly discharge.

The outstanding features of the 1923 records are the low flows in the fall of 1922 and summer of 1923, the comparatively short ice periods and low maximum stages.

The precipitation for the State was over 7.5 inches below normal for the year and previous records of mean annual flows were broken for the primary streams in the State, excepting the Delaware River.

December was the sixth consecutive month in 1922 in which the precipitation was below normal in amounts ranging from 0.5 to 1.8 inches. There was also a deficiency in each of the seven months, February to August 1923, in amounts ranging from 0.1 to 1.8 inches. No previous minimum flow records were broken for the primary streams of the State excepting that for the Schuylkill River at Reading where the discharge was 115 second-feet, the previous recorded minimum flow being 120 second-feet in November 1914.

The following table shows the minimum discharge reached during the year and those previously recorded:

TABLE NO. I.

Minimum discharge during the year ending September 30, 1923, and lowest discharge recorded.

Location	Stream	Minimum discharge during the year		Maximum discharge recorded	
Bethlehem	Lehigh River	330	September	160	October 1910
Riegelsville	Delaware River	1000	August	870	September 1908
Reading	Schuylkill River	115	August	115	August 1923
Wilkes-Barre	North Branch Susquehanna River	1060	August	820	September 1913
Williamsport	West Branch Susquehanna River	580	October	382	September 1913
Newport	Juniata River	422	October, November & December,	380	June & July 1899 November 1904
Harrisburg	Susquehanna River	3100	July & August	2330	September 1900
Kittanning	Allegheny River	670	August	570	September 1913
Avonmore	Kiskiminitas River	221	October	60	September 1908
Connellsville	Youghiogheny River	40	October	11	September 1908 October 1910

In January heavy rains occurred on the 1st in nearly all parts of the State, and rain or snow fell at frequent intervals throughout the month. While snow accumulated to unusual depths, the rains and thawing that occurred from time to time were generally sufficient to bring the streams up to moderate stages and to restore normal water supply conditions, overcoming the effects of the deficiency in precipitation during the preceding six months.

On the 3rd and 4th of March a high temperature accompanied by a few tenths of an inch rainfall on unmelted snow and ice produced a run-off which materially increased the discharge of streams, caused a general breaking of the ice and gave the highest stages for the year, except in the Monongahela and Youghiogheny rivers which took place in February, and in the Kiskiminitas River where it occurred in May.

The highest stages for the year were comparatively low, as shown by the following table, which gives the maximum stages reached during the year and the maximum stages recorded:

TABLE NO. II.

Maximum Stages reached during the year ending September 30, 1923, and Highest Stages recorded.

Location	Stream	Maximum stage during the year		Maximum stage recorded	
Bethlehem	Lehigh River	7.0	March	25.9	February 1902
Riegelsville	Delaware River	17.8	March	41.5	October 1903
Reading	Schuylkill River	5.8	March	23.0	September 1850
Wilkes-Barre	North Branch Susquehanna River	19.6	March	33.1	March 1865
Williamsport	West Branch Susquehanna River	21.6	March	33.5	June 1889
Newport	Juniata River	15.1	March	35.9	June 1889
Harrisburg	Susquehanna River	14.8	March	26.8	June 1889
Kittanning	Allegheny River	17.4	March	30.4	March 1913
Avonmore	Kiskiminitas River	18.0	May	33.8	March 1907
Lock No. 4	Monongahela River	29.1	February a	45.2	July 1888 a
Connellsville	Youghiogheny River	8.9	February	18.4	March 1907

a United States weather Bureau record.

The yearly mean discharges in the three principal basins of the State have been compared with the mean for the 14 years ending September 30, 1923, and with the minimum and maximum yearly means for the period.

In the Delaware Basin, as represented by the Delaware River at Riegelsville, the yearly mean discharge was 25 per cent less than the mean for the 14 years; 19 per cent above that of 1915, the minimum year for the period, and 38 per cent below the 1920 mean, being the maximum during the 14 years. At Bethlehem on the Lehigh River, the mean was 32 per cent less than that for the 14 years; 10 per cent lower than the minimum for the 13 years previous to 1923, which occurred in 1911, and 42 per cent below the maximum for the 14 year period, which took place in 1922.

The yearly mean discharge in the Susquehanna Basin, as represented by the North Branch Susquehanna River at Danville, was 32 per cent less than the mean for the 14 years; 6 per cent below the minimum for the years 1910-1922, which was in 1911, and 49 per cent less than the maximum in 1916. At Williamsport on the West Branch Susquehanna River, the mean discharge was 29 per cent less than the mean for the period; 13 per cent less than that of 1910, which was the minimum for the period previous to 1923. and 46 per

cent below the high mean for the period in 1912 and 1916. The mean discharge for the Juniata River at Newport was 33 per cent below the mean for the 14 years; 16 per cent less than the previous minimum for the period in 1911 and 50 per cent lower than the maximum in 1916. At Harrisburg on the Susquehanna River the mean discharge was 35 per cent less than the 14 year mean; 16 per cent less than the minimum in 1911 and 51 per cent below the maximum in 1916.

In the Ohio Basin, as represented by the Allegheny River at Kittanning, the mean discharge for the year was 27 per cent less than the mean for 14 years; 9 per cent lower than that for 1915, which was the minimum year during the period 1910-1922, and 44 per cent below that for 1912, which was the maximum during the 14 years. At Connellsville on the Youghiogheny River, the yearly mean was 27 per cent less than that for the 14 years (not including 1919, when there was not a complete record); 12 per cent lower than the previous minimum for the period, which occurred in 1915, and 53 per cent below the maximum in 1912.

FLOOD WARNING

The Flood Warning Service was continued for the Susquehanna Basin, although there were only three floods of sufficient magnitude to require warnings.

The year was marked by unusually low stages during floods; by maximum heights occurring in nearly all of the streams during the same month and the results of materially increased temperature rather than excessive rainfall.

The highest stages during the year in the Monongahela and Youghiogheny rivers occurred in the early part of February. There was a precipitation ranging from 0.6 to 2.3 inches over the drainage basins in West Virginia and Maryland on the 1st and 2nd during a period of high temperature. The Monongahela River rose 14 feet at South Brownsville to gage height 29.4 feet and the Youghiogheny River, which was less affected by the climatic conditions, rose 5 feet at Connellsville to a stage of 8.9 feet.

A high temperature that averaged about 20 degrees above normal on the 3rd and 4th of March, with a few tenths of an inch rainfall on unmelted snow and ice, ranging from 4 to 30 inches in depth on the Schuylkill and Susquehanna drainage basins, increased the stream flow in the Schuylkill and Susquehanna rivers to maximum stages for the year.

The Schuylkill River was affected to a minor degree as compared with the Susquehanna Basin streams. There was a rise of only 4.5 feet in the Schuylkill River at Reading.

In the Susquehanna Basin the North Branch rose 16 feet at Wilkes-Barre; the West Branch increased 19 feet at Williamsport, a part of which was due to impounded water above the Lock Haven ice gorge; the Juniata rose 5 feet at Newport, where there had been a backwater effect of about 5 feet since the early part of February, and the Susquehanna increased 9 feet at Harrisburg.

The following table shows the estimated stages and those which actually occurred:

TABLE NO. III.

Predicted and Actual Stages, in feet, reached March 4-6, 1923.

Location	Stream	Predicted Stage	Actual Stage
Binghamton	North Branch Susquehanna River	8.0	7.4
Corning	Chemung River	13.0	13.5
Towanda	North Branch Susquehanna River	13.0	13.4
Wilkes-Barre	North Branch Susquehanna River	19.0	19.6
Danville	North Branch Susquehanna River	15.0	15.8
Bower,	West Branch Susquehanna River	10.0	9.1
Clearfield	West Branch Susquehanna River	6.0	5.7
Renovo	West Branch Susquehanna River	13.0	13.1
Lock Haven	West Branch Susquehanna River	17.0	25.1
Jersey Shore	West Branch Susquehanna River	21.0	27.0
Williamsport	West Branch Susquehanna River	18.0	21.6
Lewisburg	West Branch Susquehanna River	17.0	18.3
Sunbury	Susquehanna River	12.0	13.8
Huntingdon	Frankstown Branch Juniata River	9.0	not rec.
Newport	Juniata River	15.0	15.2
Harrisburg	Susquehanna River	14.0	14.8

During this flood the stages were materially affected by ice conditions, especially in the West Branch below Renovo.

On the 4th of March, when there was a flow at Renovo that would under ordinary conditions give a stage of 11 feet at Lock Haven, a gorge was formed below the city which created a backwater condition and raised the water to a gage height of 25.1 feet.

This stage was only 1.7 feet lower than during the inundation of February 1918 caused by similar conditions and 4.7 feet below the June flood of 1889, which is the maximum gage height on record.

In the middle of March an increase of 10 to 20 degrees in temperature, with a rainfall which may not have averaged a half inch over the Lehigh Basin, gave a run-off which produced the highest stage in the Lehigh River during the year. It rose 3.5 feet at Bethlehem to gage height 7.0 feet, which was only 0.4 foot above the minimum annual flood stage and 18.9 feet below the maximum gage height recorded.

On the 22 and 23 of March an increase of 10 to 20 degrees in temperature, with a precipitation that probably averaged less than 0.25 inch on the Delaware Basin, resulted in the highest stage during the year in the Delaware River, when there was a rise of 8 feet at Riegelsville to gage height 17.8 feet.

In the early part of April there was a rainfall over the upper reaches of the North Branch Susquehanna Basin in New York State which may have averaged 1.5 inches. The storm was accompanied by high temperature and fell upon 5 to 15 inches of unmelted snow and ice, which produced a rapid run-off and materially increased the flow in the North Branch Susquehanna River.

There was a rise of 9 feet at Towanda, 11 feet at Wilkes-Barre and the main Susquehanna increased 5 feet at Sunbury and Harrisburg.

The following table shows the estimated stages and those which actually occurred:

TABLE NO. IV.

Predicted and Actual Stages, in feet, reached April 6-8, 1923.

Location	Stream	Predicted Stage	Actual Stage
Binghamton	North Branch Susquehanna River	12.0	12.6
Corning	Chemung River	11.0	11.0
Towanda	North Branch Susquehanna River	12.0	12.4
Wilkes-Barre	North Branch Susquehanna River	17.0	17.0
Danville	North Bhanch Susquehanna River	14.0	13.6
Sunbury	Susquehanna River	7.5	8.0
Harrisburg	Susquehanna River	9.0	8.9

Heavy rains occurred in May on the 8th or 9th and again on the 12th over nearly all parts of the State. The streams in the Allegheny and West Branch Susquehanna basins, where the rainfall may have averaged 3.0 inches and 2.5 inches respectively, were the ones most affected by the storm.

The Kiskiminitas River rose 12.5 feet at Avonmore to gage 18.0 feet; the Allegheny River increased 17 feet at Freeport to a gage height of 21.2 feet and the Ohio River rose 11 feet at Pittsburgh to a stage of 19.3 feet, which were the highest gage heights reached at those localities during the year.

The West Branch Susquehanna River rose 11 feet at Williamsport and the Susquehanna River rose 4 feet at Harrisburg.

The following table shows the estimated stages and those which actually occurred:

TABLE NO. V.

Predicted and Actual Stages, in feet, reached May 12-14, 1923.

Location	Stream	Predicted Stage	Actual Stage
Bower	West Branch Susquehanna River	11.5	11.2
Clearfield	West Branch Susquehanna River	7.0	7.3
Renovo	West Branch Susquehanna River	12.0	11.7
Lock Haven	West Branch Susquehanna River	14.0	14.5
Jersey Shore	West Branch Susquehanna River	16.5	not rec.
Williamsport	West Branch Susquehanna River	15.0	14.5
Lewisburg	West Branch Susquehanna River	13.0	11.5
Sunbury	Susquehanna River	7.5	8.0
Harrisburg	Susquehanna River	9.5	9.1

PRECIPITATION

The Department of Forests and Waters maintains nine precipitation stations at which it has installed equipment and employs observers; at twenty-one other stations the equipment is supplied by the Department but the records are kept by cooperating parties at no expense to the State.

The United States Weather Bureau maintains a much larger number of stations in Pennsylvania and publishes its records monthly and annually. As it is more convenient for parties using precipitation records to find them all under one cover, a cooperative arrangement was made with the United States Weather Bureau whereby the Department of Forests and Waters has furnished its records to the Weather Bureau for publication in its monthly and annual Climatological **Data.**

Prior to 1920 the Water Supply Commission published records in its annual reports; for subsequent years they have been published by the United States Weather Bureau.

The following table shows the precipitation stations in Pennsylvania:

TABLE NO. VI

PRECIPITATION STATIONS IN PENNSYLVANIA

ATLANTIC DRAINAGE

STATION	COUNTY	DRAINAGE BASIN
Allentown	Lehigh	Lehigh
Altoona	Blair	Juniata
Ansonia	Tioga	West Branch Susquehanna
Arendtsville	Adams	Potomac
Bellefonte	Centre	West Branch Susquehanna
Bethlehem	Northampton	Lehigh
Biglerville	Adams	Susquehanna
Bloserville	Cumberland	Susquenanna
Bustleton	Philadelphia	Delaware
Carlisle	Cumberland	Susquehanna
Catawissa	Columbia	North Branch Susquehanna
Centre Hall	Centre	Susquehanna
Chambersburg	Franklin	Potomac
Clearfield	Clearfield	West Branch Susquehanna
Coatesville	Chester	Delaware
Colebrook	Lebanon	Susquehanna
Conshohocken	Montgomery	Schuylkill
Cresson	Cambria	Juniata
Doylestown	Bucks	Delaware
Driftwood	Cameron	West Branch Susquehanna
Emporium	Cameron	West Branch Susquehanna
Ephrata	Lancaster	Susquehanna
Everett	Bedford	Juniata
Forest City	Susquehanna	North Branch Susquehanna
Freeland	Luzerne	Lehigh

STATION	COUNTY	DRAINAGE BASIN
George School	Bucks	Delaware
Gettysburg	Adams	Potomac
Girardville	Schuylkill	Susquehanna
Gordon	Schuylkill	Susquehanna
Gouldsboro	Wayne	Lehigh
Gratersford	Montgomery	Schuylkill
Hamburg	Berks	Schuylkill
Hanover	York	Susquehanna
Harrisburg	Dauphin	Susquehanna
Hawley	Wayne	Delaware
Holtwood	Lancaster	Susquehanna
Huntingdon	Huntingdon	Juniata
Jersey Shore	Lycoming	West Branch Susquehanna
Kennett Square	Chester	Delaware
Lancaster	Lancaster	Susquehanna
Lansford	Carbon	Lehigh
Lawrenceville	Tioga	North Branch Susquehanna
Lebanon	Lebanon	Susquehanna
Lewisburg	Union	West Branch Susquehanna
Lloyd	Tioga	West Branch Susquehanna
Lock Haven	Clinton	West Branch Susquehanna
Lykens	Dauphin	Susquehanna
Marcus Hook	Delaware	Delaware
Mauch Chunk	Carbon	Lehigh
Mifflintown	Juniata	Juniata
Montrose	Susquehanna	North Branch Susquehanna
Mount Pocono	Monroe	Delaware
Mount Union	Huntingdon	Juniata
Muncy Valley	Sullivan	West Branch Susquehanna
Narberth	Montgomery	Delaware
Neshaminy	Bucks	Delaware
Palmerton	Carbon	Lehigh
Philadelphia (a)	Philadelphia	Delaware
Philadelphia (b)	Philadelphia	Delaware
Phoenixville	Chester	Schuylkill
Pottstown	Montgomery	Schuylkill
Pottsville	Schuylkill	Schuylkill
Quakertown	Bucks	Delaware
Reading	Berks	Schuylkill
Renovo	Clinton	West Branch Susquehanna
Scranton	Lackawanna	North Branch Susquehanna
Selinsgrove	Snyder	Susquehanna
Shawmont	Philadelphia	Schuylkill
State College	Centre	West Branch Susquehanna
Sunbury	Northumberland	Susquehanna
Towanda	Bradford	North Branch Susquehanna
Weikert	Union	Susquehanna
Wellsboro	Tioga	West Branch Susquehanna
West Chester	Chester	Delaware
White Haven	Luzerne	Lehigh
Wilkes-Barre	Luzerne	North Branch Susquehanna

STATION	COUNTY	DRAINAGE BASIN
Williamsport	Lycoming	West Branch Susquehanna
York	York	Susquehanna
York Haven	York	Susquehanna
Port Jervis, N. Y.	Orange	Delaware
Trenton, N. J.	Mercer	Delaware

OHIO DRAINAGE

Beaver Dam	Beaver	Ohio
Beaver Falls	Beaver	Beaver
Bradford	McKean	Allegheny
Bradys Bend	Armstrong	Allegheny
Brookville	Jefferson	Allegheny
Clarion	Clarion	Allegheny
Claysville	Washington	Ohio
Cloe	Jefferson	Allegheny
Clymer	Indiana	Kiskiminitas
Confluence	Somerset	Youghiogheny
Coraopolis	Allegheny	Ohio
Corry	Erie	Allegheny
Creekside	Indiana	Allegheny
Derry	Westmoreland	Kiskiminitas
Ebensburg	Cambria	Kiskiminitas
Elk Lick	Somerset	Youghiogheny
Falls Creek	Clearfield	Allegheny
Franklin	Venango	Allegheny
Freeport	Armstrong	Allegheny
Greensburg	Westmoreland	Youghiogheny
Greenville	Mercer	Beaver
Grove City	Mercer	Beaver
Herrs Island Dam	Allegheny	Allegheny
Indiana	Indiana	Kiskiminitas
Ingram	Allegheny	Ohio
Irwin	Westmoreland	Youghiogheny
Johnstown	Cambria	Kiskiminitas
Ketner	Elk	Allegheny
Linesville	Crawford	Beaver
Lock No. 4	Washington	Monongahela
Lycippus	Westmoreland	Kiskiminitas
Martin	Fayette	Monongahela
New Castle	Lawrence	Beaver
Newell	Fayette	Monongahela
North Shenango	Crawford	Beaver
Parkers Landing	Armstrong	Allegheny
Pennline	Crawford	Beaver
Pittsburgh	Allegheny	Ohio
Ridgway	Elk	Allegheny
Saegertown	Crawford	Allegheny
Saltsburg	Indiana	Kiskiminitas
Sharon	Mercer	Beaver
Somerset	Somerset	Youghiogheny
Springdale	Allegheny	Allegheny

STATION	COUNTY	DRAINAGE BASIN
Stoyestown	Somerset	Kiskiminitas
Summit	Crawford	Beaver
Tionesta	Forest	Allegheny
Turnervilie	Crawford	Beaver
Uniontown	Fayette	Monongahela
Unity Reservoir	Westmoreland	Youghiogheny
Vandergrift	Westmoreland	Kiskiminitas
Warren	Warren	Allegheny
Washington	Washington	Ohio
Waynesburg	Greene	Monogahela
Westford	Crawford	Beaver
West Newton	Westmoreland	Youghiogheny
LAKE DRAINAGE		
Erie	Erie	Lake Erie
West Bingham	Potter	Genesee

The mean precipitation for the year ending September 30, 1923, as computed from records of the United States Weather Bureau and Department of Forests and Waters, was 35.44 inches, or 7.53 inches below the normal.

There was a deficiency in precipitation, in amounts varying from 0.1 inch to 1.8 inches, during ten months of the year. In October, when the replenishing period usually begins, there was a deficiency of over three-quarters of an inch rainfall. It was the fourth consecutive month in which there had been a rainfall below normal and it continued through the months of November and December, with deficiencies of 1.5 inches and 0.6 inch respectively.

The continued deficiency in rainfall produced the most serious drought experienced in the State since 1908, when the deficiency extended through five months, also beginning with July. The average rainfall during the months of September, October and November 1922, was 5.20 inches for the three months. State averages are available beginning with the year 1888, but the only instance of a drought of such severity in the corresponding months was in 1908, when the average for the three months amounted to only 4.45 inches.

At Philadelphia the total rainfall for the four months ending with November 1922 was only 4.93 inches, and the nearest approach to such a condition for a period of equal length, indicated by the records for 103 years, was in the corresponding months of 1916, when the total rainfall amounted to 6.07 inches.

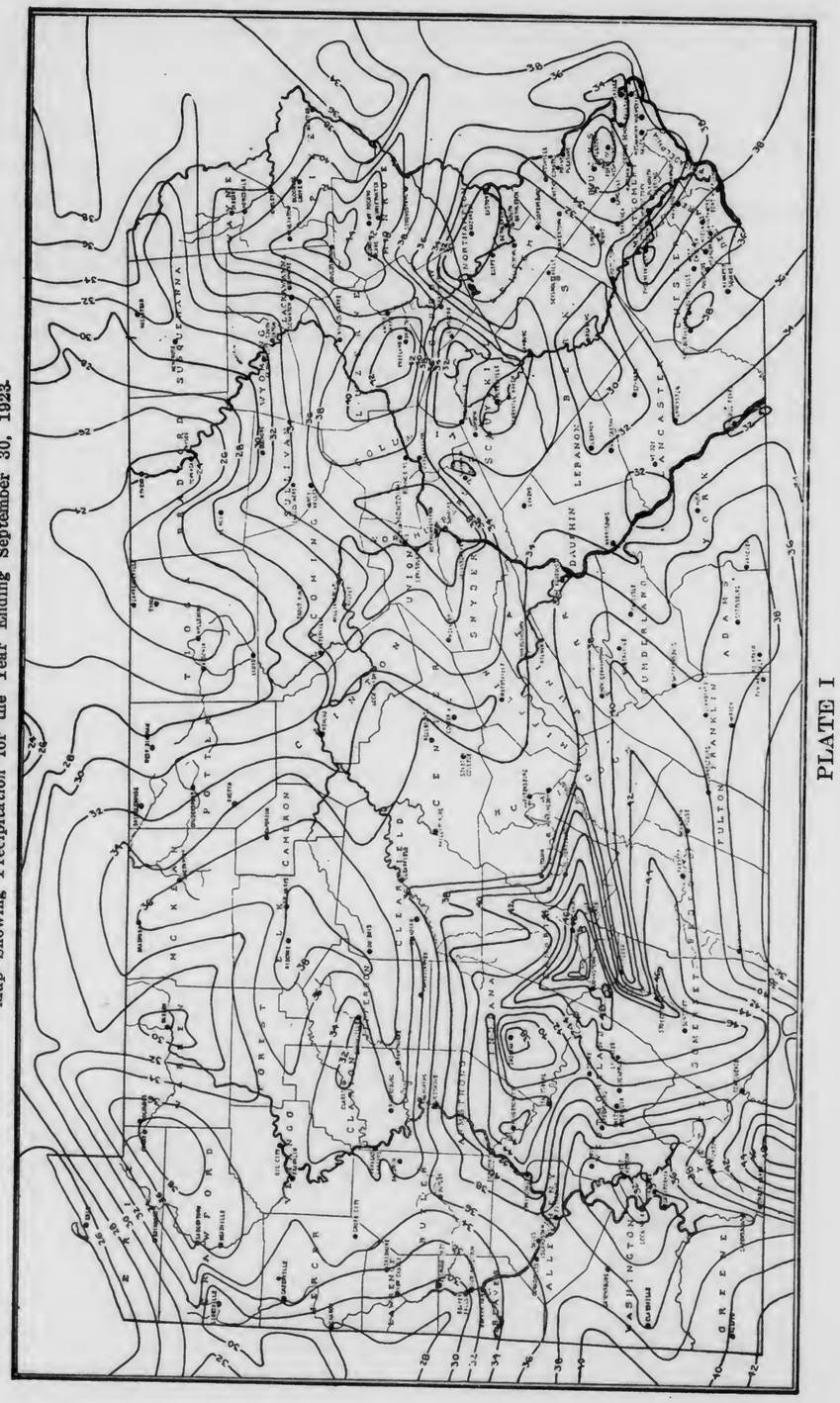
During the winter months the temperature averaged slightly above normal and the total snowfall averaged about 44.5 inches. In January rain or snow fell at fairly close intervals throughout the month and the average snowfall for the State was 17.6 inches, which

exceeded all monthly averages since that for February 1920, which was 18.3 inches.

In June, during the growing season, the rainfall was 1.76 inches below normal with deficiencies ranging from 0.1 to 1.4 inches during the four months preceding and two months following

The precipitation map on page 20, showing two inch isohyetals for the year ending September 30, 1923, was drawn from all known precipitation stations in Pennsylvania, including those operated by private interests not published by the United States Weather Bureau. For drainage areas in adjacent states, tributary to Pennsylvania streams, the Weather Bureau records were used.

The yearly precipitation, over drainage areas tributary to gaging stations, used in calculating the per cent run-off to precipitation, was computed from the following map.



DEPARTMENT OF FORESTS AND WATERS
WATER RESOURCES SERVICE
Map Showing Precipitation for the Year Ending September 30, 1923.

PLATE I

STREAM FLOW RECORDS

DEFINITION OF TERMS

The volume of water flowing in a stream—the "run-off" or "discharge"—is expressed in various terms, each of which has become associated with a certain class of work. These terms may be divided into two groups—(1) those that represent a rate of flow, as second-feet, gallons per minute, and discharge in second-feet per square mile, and (2) those that represent the actual quantity of water, as run-off in depth of inches, and millions of cubic feet. The principal terms used in this series of reports are second-feet, second-feet per square mile, and run-off in inches. They may be defined as follows:

"Second-feet" is an abbreviation for "cubic feet per second." A second-foot is the rate of discharge of water flowing in a channel of rectangular cross section 1 foot wide and 1 foot deep at an average velocity of 1 foot per second. It is generally used as a fundamental unit from which others are computed by the use of the factors given in the tables of convenient equivalents, page 22.

"Second-feet per square mile" is the average number of cubic feet of water flowing per second from each square mile of area drained, on the assumption that the run-off is distributed uniformly both as regards time and area.

"Run-off (depth in inches)" is the depth to which an area would be covered if all the water flowing from it in a given period were uniformly distributed on the surface. It is used for comparing run-off with rainfall, which is usually expressed in depth in inches.

The following terms not in common use are here defined:

"Stage-discharge relation", an abbreviation for the term "relation of gage height to discharge".

"Control", a term used to designate the section or sections of the stream below the gage which determine the stage-discharge relation at the gage. It should be noted that the control may not be the same at all stages.

The "point of zero flow" for a gaging station is that point on the gage—the gage height—to which the surface of the river falls when the discharge is reduced to zero.

CONVENIENT EQUIVALENTS

The following is a list of convenient equivalents for use in hydraulic computations:

Table for converting discharge in second-feet per square mile into run-off in depth in inches over the area.

Discharge (second-feet per square mile)	Run-of (depth in inches)				
	1 day	28 days	29 days	30 days	31 days
1	0.03719	1.041	1.079	1.116	1.153
2	.07438	2.083	2.157	2.231	2.306
3	.11157	3.124	3.236	3.347	3.459
4	.14876	4.165	4.314	4.463	4.612
5	.18595	5.207	5.393	5.578	5.764
6	.22314	6.248	6.471	6.694	6.917
7	.26033	7.289	7.550	7.810	8.070
8	.29752	8.331	8.628	8.926	9.223
9	.33471	9.372	9.707	10.041	10.376

Note—For part of a month multiply the run-off for 1 day by the number of days.

Table for converting discharge in second-feet into run-off in millions of cubic feet.

Discharge (second-feet)	Run-off (millions of cubic feet)				
	1 day	28 days	29 days	30 days	31 days
1	0.0864	2.419	2.506	2.592	2.678
2	.1728	4.838	5.012	5.184	5.356
3	.2592	7.257	7.518	7.776	8.034
4	.3456	9.676	10.02	10.37	10.71
5	.4320	12.10	12.53	12.96	13.39
6	.5184	14.51	15.04	15.55	16.07
7	.6048	16.93	17.54	18.14	18.75
8	.6912	19.35	20.05	20.74	21.42
9	.7776	21.77	22.55	23.33	24.10

Note—For part of a month multiply the run-off for 1 day by the number of days.

Table for converting discharge in second-feet into run-off in millions of gallons.

Discharge (second-feet)	Run-off (millions of gallons)				
	1 day	28 days	29 days	30 days	31 days
1	0.6463	18.10	18.74	19.39	20.04
2	1.293	36.20	37.48	38.78	40.08
3	1.939	54.30	56.22	58.17	60.12
4	2.585	72.40	74.96	77.56	80.16
5	3.232	90.50	93.70	96.95	100.2
6	3.878	108.6	112.4	116.3	120.2
7	4.524	126.7	131.2	135.7	140.3
8	5.170	144.8	149.9	155.1	160.3
9	5.817	162.9	168.7	174.5	180.4

Note—For part of a month multiply the run-off for one day by the number of days.

Table for converting velocity in feet per second into velocity in miles per hour (1 foot per second = 0.681818 mile per hour, or very nearly two-thirds mile per hour; 1 mile per hour = 1.46666 feet per second. In computing the table the value 0.68182 and 1.4667 were used)

Feet per second (units)	Miles per hour for tenths of foot per second									
	0	1	2	3	4	5	6	7	8	9
0	0.000	0.068	0.136	0.205	0.273	0.341	0.409	0.477	0.545	0.614
1	.682	.750	.818	.886	.995	1.02	1.09	1.16	1.23	1.30
2	1.36	1.43	1.50	1.57	1.64	1.70	1.77	1.84	1.91	1.98
3	2.05	2.11	2.18	2.25	2.32	2.39	2.45	2.52	2.59	2.66
4	2.73	2.80	2.86	2.93	3.00	3.07	3.14	3.20	3.27	3.34
5	3.41	3.48	3.55	3.61	3.68	3.75	3.82	3.89	3.95	4.02
6	4.09	4.16	4.23	4.30	4.36	4.43	4.50	4.57	4.64	4.70
7	4.77	4.84	4.91	4.98	5.05	5.11	5.18	5.25	5.32	5.39
8	5.45	5.52	5.59	5.66	5.73	5.80	5.86	5.93	6.00	6.07
9	6.14	6.20	6.27	6.34	6.41	6.48	6.55	6.61	6.68	6.75

1 second-foot equals 7.48 United States gallons per second; equals 448.8 gallons per minute; equals 646,317 gallons for one day.
1 second-foot for one year (365 days) covers 1 square mile 1.131 feet or 13.572 inches deep.
1 second-foot for one year (365 days) equals 31,536,000 cubic feet.
1 second-foot for one day equals 86,400 cubic feet.
1,000,000,000 (1 United States Billion) cubic feet equals 11,570 second-feet for one day.
1,000,000,000 cubic feet equals 414 second-feet for one 28-day month.
1,000,000,000 cubic feet cuqals 399 second-feet for one 29-day month.
1,000,000,000 cubic feet equals 386 second-feet for one 30-day month.
1,000,000,000 cubic feet equals 373 second-feet for one 31-day month.
100 United States gallons per minute equals 0.223 second-foot.
1,000,000 United States gallons per day equals 1.55 second-feet.
1 inch deep on 1 square mile equals 2,323,200 cubic feet.
1 inch deep on 1 square mile equals 0.0737 second-foot per year.
1 foot equals 0.3048 meter.
1 mile equals 1.60935 kilometers.
1 mile equals 5,280 feet.
1 square mile equals 2.59 square kilometers.
1 cubic foot equals 0.0283 cubic meter.
1 cubic foot of water weighs 62.5 pounds.
1 cubic meter per minute equals 0.5886 second-foot.
1 horsepower equals 550 foot-pounds per second.
1 horsepower equals 76.0 kilogram-meters per second.
1 horsepower equals 746 watts.
1 horsepower equals 1 second-foot falling 8.80 feet.
1¼ horsepower equals about 1 kilowatt.

To calculate water power quickly: $\frac{\text{Sec. ft. x fall in feet}}{11}$ = net horsepower on water wheel realizing 80 per cent. of theoretical power.

EXPLANATION OF DATA

The data presented in this report covers the period October 1, 1922, to September 30, 1923. At the first of January in most parts of the United States much of the precipitation in the preceding three months is stored as ground water, in the form of snow or ice or in ponds, lakes, and swamps, and this stored water passes off in the streams during the spring break-up; at the end of September, on the other hand, the only stored water available for run-off is possibly a small quantity in the ground; therefore the run-off for a year beginning October 1 is practically all derived from precipitation within that year.

The base data collected at gaging stations consist of records of stage, measurements of discharge, and general information used to supplement the gage heights and discharge measurements in determining the daily flow. The records of stage are obtained from

direct reading on a chain or staff gage. Measurements of discharge are made with a current meter by the general methods outlined in standard textbooks on the measurement of river discharge.

From the discharge measurements rating tables are prepared that give the discharge for any stage. The application of the daily gage heights to these rating tables gives the daily discharge from which the monthly and yearly mean discharge are computed.

The data presented for each gaging station comprises a description of the station, a table giving results of discharge measurements, a table showing daily gage height, a table showing the daily discharge, and a table of monthly and yearly discharge and run-off.

Where the base data are insufficient to determine the daily discharge, tables giving daily gage heights and results of discharge measurements are published.

The description of the station gives, in addition to statements regarding location and equipment, information in regard to any conditions that may affect the permanence of the stage-discharge relation, covering such subjects as the occurrence of ice, shifting of control, and the cause and effect of backwater. It gives also information as to diversions that decrease the flow at the gage, artificial regulation, maximum and minimum recorded stages, and the accuracy of the records.

The table of daily discharge gives the discharge in second-feet corresponding to the mean of the gage heights read each day. At stations on streams subject to sudden or rapid diurnal fluctuation the discharge obtained from the rating table and the mean daily gage heights may not be the true mean discharge for the day.

In the table of monthly discharge the column headed "Maximum" gives the mean flow for the day when the mean gage height was highest. As the gage height is the mean for the day it does not indicate correctly the stage when the water surface was at crest height, and the corresponding discharge was consequently larger than that given in the maximum column. Likewise, in the column headed "Minimum", the quantity given is the mean flow for the day when the mean gage height was lowest. The column headed "Mean" is the average flow in cubic feet per second during the month. On this average flow computation recorded in the remaining columns are based.

ACCURACY OF FIELD DATA AND COMPUTED RECORDS

The accuracy of stream-flow data depends primarily (1) on the permanence of a stage-discharge relation and (2) on the accuracy of observation of stage, measurements of flow, and interpretation of records.

A paragraph in the description of the station give information regarding (1) permanence of the stage-discharge relation, (2) precision with which the discharge rating curve is defined, (3) refinement of gage readings, (4) frequency of gage readings, and (5) methods of applying daily gage height to the rating table to obtain the daily discharge.

For the rating tables "well defined" indicates, in general, that the rating is probably accurate within 5 per cent; "fairly well defined", within 10 per cent; "poorly defined", within 15 to 25 per cent. These notes are very general and are based on the plotting of the individual measurements with reference to the mean rating curve.

The monthly means for any station may represent with high accuracy the quantity of water flowing past the gage, but the figures showing discharge per square mile and depth of run-off in inches may be subject to some error caused by the inclusion of non-contributing districts in the measured drainage area, or by inability to interpret the effect of artificial regulation of the flow of the river above the station.

The table of monthly discharge gives only a general idea of the flow at the station and should not be used for other than preliminary estimates; the tables of daily discharge allow more detailed studies of the variation in flow. It should be borne in mind, however, that the observations in each succeeding year may be expected to throw new light on data previously published.

The Commonwealth of Pennsylvania is divided into three main drainage basins; the Delaware, Susquehanna and Ohio. The hydrographic data in the following pages are divided into three groups, corresponding to these three basins. The stations in each basin are shown in the following tables and their location is indicated on the map (Plate II) with reference number corresponding to those given in the tables.

TABLE NO. VII

Gaging Stations in Delaware Basin*

Station No.	Stream.	Location
1	Lackawaxen River	West Hawley
2	Wallenpaupack Creek	Wilsonville
3	Shohola Creek	Shohola
4	Delaware River	Port Jervis, N. Y.
5	Bushkill Creek	Shoemakers
6	McMichaels Creek	Stroudsburg
7	Lehigh River	Tannery
8	Little Lehigh Creek	Allentown
9	Lehigh River	Bethlehem
10	Delaware River	Riegelsville
11	Little Schuylkill River	Tamaqua
12	Schuylkill River	Reading
13	Perkiomen Creek	Graters Ford
14	Schuylkill River	Conshohocken
15	Bradywine Creek	Chadds Ford

*For information available on each station, see description of station.

TABLE VIII

Gaging Stations in Susquehanna Basin*

Station No.	Stream.	Location
1	North Branch Susquehanna River	Binghamton, N. Y.
2	Chemung River	Corning, N. Y.
3	North Branch Susquehanna River	Towanda
4	Towanda Creek	Monroeton
5	Tunkhannock Creek	Dixon
6	Lackawanna River	Moosic
7	North Branch Susquehanna River	Wilkes-Barre
8	Wapwallopen Creek	Wapwallopen
9	Nescopeck Creek	St. Johns
10	Fishing Creek	Bloomsburg
11	North Branch Susquehanna River	Danville
12	West Branch Susquehanna River	Bower
13	West Branch Susquehanna River	Clearfield
14	Clearfield Creek	Dimeling
15	Driftwood Branch Sinnemahoning Creek	Sterling Run
16	Driftwood Branch Sinnemahoning Creek	Driftwood
17	West Branch Susquehanna River	Renovo
18	West Branch Susquehanna River	Lock Haven
19	Bald Eagle Creek	Milesburg
20	Bald Eagle Creek	Beech Creek Station
21	Pine Creek	Cedar Run
22	West Branch Susquehanna River	Jersey Shore
23	Lycoming Creek	Trout Run
24	West Branch Susquehanna River	Williamsport
25	West Branch Susquehanna River	Lewisburg
26	Susquehanna River	Sunbury
27	Frankstown Branch Juniata River	Williamsburg
28	Little Juniata River	Tyrone
29	Frankstown Branch Juniata River	Huntingdon
30	Raystown Branch Juniata River	Saxton
31	Tuscarora Creek	Port Royal
32	Juniata River	Newport
33	Susquehanna River	Harrisburg
34	Little Swatara Creek	Pine Grove
35	Swatara Creek	Harpers
36	Codorus Creek	York

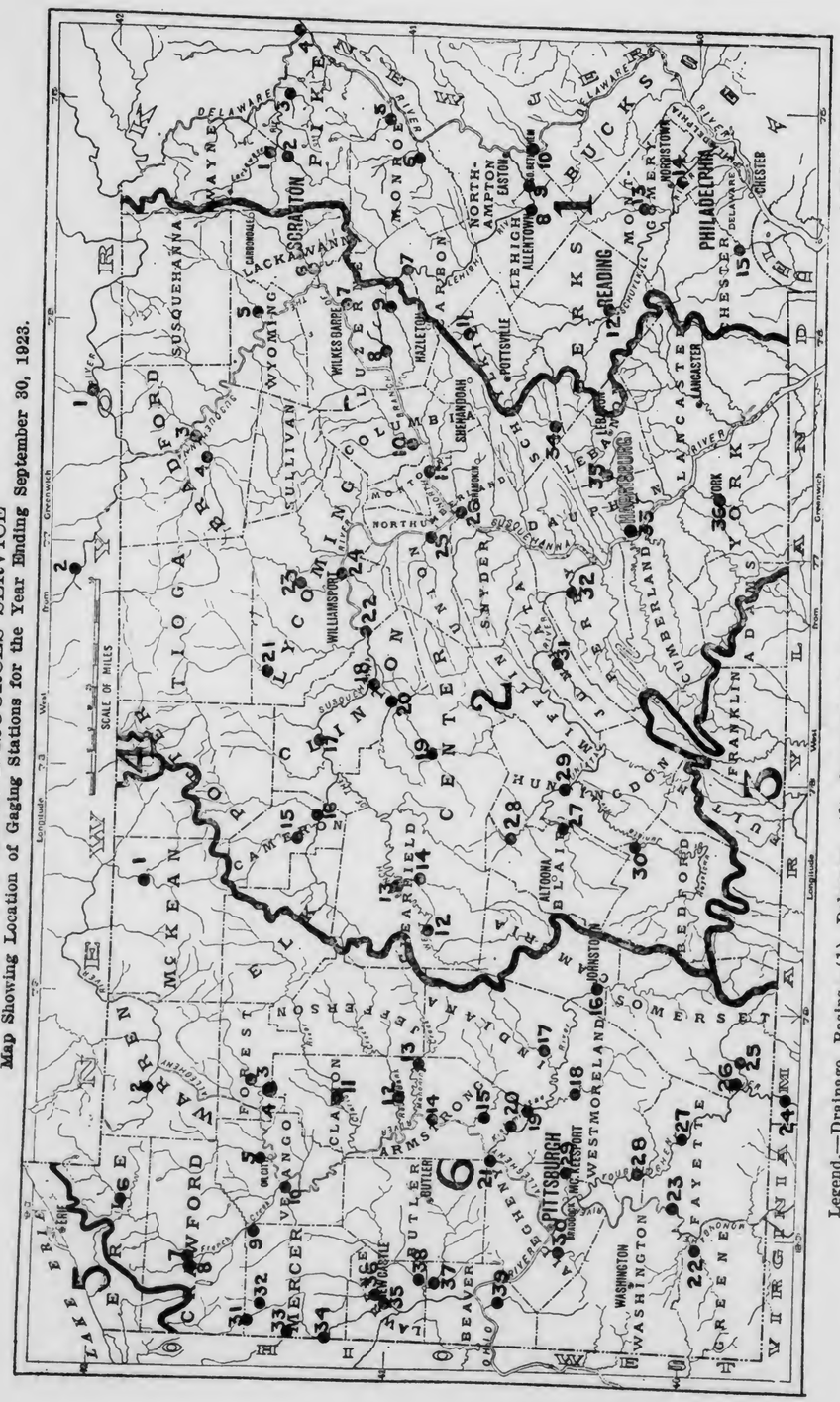
*For information available on each station, see description of station.

TABLE NO. IX

Gaging Stations in Ohio Basin*

Station No.	Stream.	Location
1	Allegheny River	Larabee
2	Brokenstraw Creek	Youngsville
3	Tionesta Creek	Butler Bridge
4	Tionesta Creek	Nebraska
5	Oil Creek	Rouseville
6	French Creek	Kimmeytown
7	French Creek	Saegertown
8	Cussewago Creek	Meadville
9	French Creek	Carlton
10	Allegheny River	Franklin
11	Clarion River	Clarion
12	Red Bank Creek	Saint Charles
13	Mahoning Creek	Dayton
14	Allegheny River	Kittanning
15	Crooked Creek	Hileman's Farm
16	Stony Creek	Johnstown
17	Blacklick Creek	Blacklick
18	Loyalhanna Creek	New Alexandria
19	Kiskiminitas River	Avomore
20	Kiskiminitas River	Vandergrift
21	Allegheny River	Freeport
22	South Fork Ten Mile Creek	Pollock's Mill
23	Monongahela River	South Brownsville
24	Youghiogheny River	Friendsville, Md.
25	Casselman River	Markleton
26	Laurel Hill Creek	Ursina
27	Youghiogheny River	Connellsville
28	Youghiogheny River	Sutersville
29	Turtle Creek	Trafford
30	Chartiers Creek	Carnegie
31	Shenango River	Jamestown
32	Little Shenango River	Greenville
33	Pymatuning Creek	Orangeville
34	Shenango River	Sharon
35	Shenango River	New Castle
36	Neshannock Creek	Eastbrook Station
37	Connoquenessing Creek	Hazen
38	Slippery Rock Creek	Wurtemburg
39	Raccoon Creek	Moffatt's Mill

*For information available on each station, see description of station.



DEPARTMENT OF FORESTS AND WATERS
WATER RESOURCES SERVICE
Map Showing Location of Gaging Stations for the Year Ending September 30, 1923.

Legend.—Drainage Basins—(1) Delaware, (2) Susquehanna, (3) Potomac, (4) Genesee, (5) Erie, (6) Ohio.

PLATE II

', by E. L. Tunison

GAGING STATION RECORDS

DELAWARE BASIN

DELAWARE BASIN—STATION NO. 1

LACKAWAXEN RIVER NEAR WEST HAWLEY

Location.—At single-span steel highway bridge, known as Riverside Bridge, West Hawley, Wayne County, about one half mile upstream from the mouth of Middle Creek.

Drainage Area.—212 square miles.

Records Available.—May 19, 1921, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read to hundredths twice daily by J. S. Pennell.

Discharge Measurements.—Made from downstream side of bridge or wading.

Channel and Control.—Section is walled in below the bridge. Banks are of medium height and subject to overflow at extremely high stages. Bed is composed of gravel. Control is at a riffle about 50 feet below the gage, where the bed is composed of coarse gravel.

Extremes of Stage.—Maximum gage height during the year, estimated from hydrograph, 7.3 feet at 3 a. m. March 24; minimum, 0.92 foot at 4.40 p. m. July 23.

Ice.—Stage-discharge relation usually affected by ice.

The following discharge measurement was made by J. M. Snavely: No. 6, August 17: Gage height 1.23 feet; discharge, 65.5 second-feet.

Daily Mean Gage Height, in feet, of Lackawaxen River near West Hawley, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.44	1.24	1.24	2.25	2.63	2.86	2.30	2.68	1.51	1.36	1.71	1.73
2	1.36	1.21	1.29	3.48	2.80	2.88	2.30	2.40	1.50	1.23	1.55	1.54
3	1.45	1.19	1.44	3.00	2.92	2.95	2.68	2.20	1.48	1.28	1.36	1.44
4	1.36	1.22	1.35	2.69	2.82	3.87	3.60	2.11	1.50	1.27	2.64	1.58
5	1.36	1.28	1.41	2.53	2.79	5.32	4.50	2.04	1.55	1.22	1.84	1.50
6	1.34	1.26	1.40	2.46	2.68	5.08	5.62	2.00	1.85	1.26	1.71	1.46
7	-------	1.30	1.62	2.22	2.75	4.51	4.40	1.86	1.67	1.20	1.60	1.47
8	1.47	1.29	1.52	2.34	2.70	4.31	3.75	1.97	2.08	1.20	1.44	1.51
9	1.83	1.28	1.36	2.33	2.74	3.60	3.40	4.34	1.76	1.12	1.44	2.18
10	1.92	1.33	1.60	2.27	2.70	3.48	2.97	3.48	1.64	1.20	1.24	1.80
11	1.95	1.25	1.50	2.15	2.64	3.20	2.86	2.85	1.53	1.22	1.24	1.64
12	1.63	1.20	1.39	2.21	2.69	3.20	2.56	3.01	1.52	1.18	1.14	1.56
13	1.56	1.32	2.12	2.16	2.70	3.50	2.44	3.72	1.42	1.17	1.46	1.46
14	1.52	1.28	1.70	-------	2.68	3.13	2.30	2.96	1.39	1.18	1.49	1.42
15	1.42	1.27	1.72	2.10	2.70	2.77	2.22	2.68	1.48	1.18	1.35	1.41
16	1.36	1.28	1.55	2.16	2.68	3.22	2.08	2.58	1.49	1.07	1.30	1.34
17	1.47	1.28	1.70	2.18	2.66	4.87	2.05	2.70	1.44	1.15	1.16	1.29
18	1.51	1.30	1.68	2.18	2.64	4.68	1.96	2.42	1.39	1.11	1.15	1.25
19	1.45	1.34	1.68	2.22	2.71	4.49	1.92	2.30	1.36	1.15	1.08	1.24
20	1.40	1.29	1.66	2.14	2.62	3.70	1.85	2.16	1.33	1.26	1.27	1.14
21	1.34	1.32	1.69	2.14	2.73	3.60	1.80	2.29	1.35	1.15	1.22	1.53
22	1.24	1.26	1.77	3.07	2.70	4.25	1.78	2.25	1.33	1.06	1.18	1.62
23	1.28	1.20	1.56	3.25	2.70	6.17	1.75	2.04	1.27	.94	1.31	1.77
24	1.24	1.23	1.60	2.98	2.69	6.67	1.71	1.94	1.14	1.11	1.25	2.94
25	1.38	1.20	1.58	3.03	-------	5.05	1.58	1.88	1.28	1.14	1.24	2.10
26	1.36	1.28	1.53	2.98	2.70	4.45	1.63	1.79	1.23	1.12	1.12	1.95
27	1.29	1.32	1.54	2.98	2.75	3.75	1.62	1.74	1.81	1.09	1.15	1.83
28	1.17	1.34	1.55	2.84	2.82	3.70	2.16	1.70	1.64	1.80	1.64	1.74
29	1.24	1.28	1.86	2.72	-------	3.30	4.88	1.65	1.57	2.15	3.90	2.04
30	1.23	1.23	-------	2.68	-------	2.87	3.58	1.58	1.56	1.69	2.35	1.84
31	1.15	-------	1.90	2.57	-------	2.60	-------	1.56	-------	1.57	1.86	-------

Note.—Gage height Oct. 7, Dec. 30, Jan. 14 and Feb. 25 not observed. Stage-discharge relation Dec. 17 to Mar. 14 and Mar. 17 affected by ice.

WALLENPAUPACK CREEK AT WILSONVILLE

Location.—At two-span steel highway bridge, about one and a half miles south of Hawley, at Wilsonville, Wayne County.

Drainage Area.—227 square miles.

Records Available.—July 3, 1908, to September 30, 1923.

Gages.—Vertical staff attached to downstream end of pier and a Barrett and Lawrence water-stage recorder installed on top downstream end of pier. Zero elevation of gages, 1,146.78 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank overflows at extremely high stages; left is high and not subject to overflow. Bed is composed of rock. Control is a log weir, about 70 feet below gage.

Extremes of Discharge.—Maximum stage during the year, 3.30 feet on March 24 (discharge, 2,340 second-feet); minimum, 0.59 foot on September 18 (discharge, 30 second-feet).

Ice.—Stage-discharge relation not usually affected by ice.

Regulation.—Flow during low stages regulated, for the operation of silk mills, by use of flashboards on a three foot concrete dam about 35 feet above gage.

Cooperation.—Records furnished by L. B. Stillwell and H. S. Putnum, Consulting Engineers, and Electric Bond and Share Company, New York City.

The following discharge measurement was made by H. J. McIntyre: No. 33, August 17: Gage height, 0.70 foot; discharge, 73.6 second feet.

Daily Mean Gage Height, in feet, of Wallenpaupack Creek at Wilsonville, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.65	0.64	0.64	0.81	0.80	0.80	1.56	1.10	0.92	0.80	-------	-------
2	.65	.64	.66	.82	.80	.80	1.54	1.10	.90	.80	-------	-------
3	.65	.64	.65	.84	.79	.82	1.56	1.10	.92	.80	-------	-------
4	.65	.64	.64	.84	.81	.84	1.60	1.05	.94	.82	-------	-------
5	.65	.64	.64	.83	.80	.87	2.10	1.00	.95	.81	-------	-------
6	.65	.64	.65	.83	.79	.86	2.55	1.00	1.00	.81	-------	-------
7	.66	.65	.67	.82	.79	.87	2.30	1.00	1.20	.81	-------	-------
8	.70	.68	.70	.82	.78	.88	2.10	1.00	1.35	.80	-------	-------
9	.76	.69	.70	.81	.78	.90	1.90	1.10	1.50	.80	-------	-------
10	.87	.67	.70	.80	.78	.91	1.80	1.25	1.65	.78	-------	-------
11	1.10	.67	.70	.80	.78	.94	1.70	1.50	1.40	.80	-------	-------
12	1.20	.67	.69	.80	.78	.97	1.50	1.70	1.20	.78	-------	-------
13	.96	.67	.69	.80	.77	1.00	1.35	2.00	1.10	.78	-------	-------
14	.84	.66	.68	.80	.76	1.40	1.24	2.10	1.00	.78	-------	-------
15	.76	.65	.68	.82	.77	1.70	1.23	2.00	1.10	.77	-------	.64
16	.70	.64	.69	.82	.77	1.82	1.23	1.80	1.20	.77	-------	.61
17	.69	.64	.70	.84	.76	1.90	1.22	1.90	1.00	.77	-------	.60
18	.71	.64	.72	.83	.76	1.90	1.22	1.75	1.00	.76	-------	.59
19	.68	.64	.76	.82	.77	1.94	1.21	1.60	.95	.76	-------	.60
20	.67	.64	.77	.82	.77	2.00	1.21	1.50	.90	.76	-------	.60
21	.66	.64	.78	.83	.77	2.40	1.20	1.45	.90	.75	-------	.60
22	.66	.64	.80	.84	.76	2.60	1.20	1.50	.85	.75	-------	.78
23	.66	.64	.79	.84	.77	2.70	1.20	1.20	.85	.75	-------	.85
24	.66	.64	.80	.83	.77	3.30	1.20	1.20	.85	.75	-------	1.68
25	.69	.64	.79	.82	.77	3.00	1.19	1.15	.85	.76	-------	1.71
26	.67	.64	.79	.81	.77	2.70	1.18	1.10	.87	.76	-------	1.30
27	.66	.64	.78	.81	.78	2.50	1.17	1.00	.85	.85	-------	1.05
28	.65	.64	.80	.80	.78	2.30	1.17	1.00	.83	1.30	-------	.96
29	.65	.64	.80	.80	-------	1.90	1.15	.95	.80	1.50	-------	1.06
30	.65	.64	.82	.81	-------	1.70	1.10	.94	.80	1.40	-------	1.13
31	.65	-------	.82	.81	-------	1.60	-------	.94	-------	1.50	-------	-------

Note.—Gage heights Aug. 1 to Sept. 14 not observed.

Daily Discharge, in second-feet, of Wallenpaupack Creek at Wilsonville, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	46	44	44	97	94	94	580	219	137	94	-------	-------
2	46	44	48	100	94	94	493	219	130	94	-------	-------
3	46	44	46	107	90	100	508	219	137	94	-------	-------
4	46	44	44	107	97	107	539	195	146	100	-------	-------
5	46	44	44	104	94	118	970	172	150	97	-------	-------
6	46	44	46	104	90	115	1,430	172	172	97	-------	-------
7	48	46	52	100	90	118	1,166	172	271	97	-------	-------
8	60	56	60	100	86	122	970	172	361	94	-------	-------
9	81	56	60	97	86	130	793	219	463	94	-------	-------
10	118	52	60	94	86	134	703	300	577	86	-------	-------
11	219	52	60	94	86	146	618	463	392	94	-------	-------
12	271	52	58	94	86	157	463	618	271	86	-------	-------
13	155	52	58	94	83	172	361	890	219	86	-------	-------
14	107	48	56	94	79	392	294	970	172	86	-------	-------
15	79	46	56	100	83	618	288	890	219	83	-------	44
16	60	44	58	100	83	719	288	703	271	89	-------	35
17	58	44	60	107	79	793	282	793	172	83	-------	32
18	63	44	66	104	79	793	282	658	172	79	-------	30
19	56	44	79	100	83	828	276	539	150	79	-------	32
20	52	44	83	100	83	890	276	463	130	79	-------	32
21	48	44	86	104	83	1,270	271	427	130	76	-------	32
22	48	44	94	107	79	1,485	271	463	111	76	-------	86
23	48	44	90	107	83	1,595	271	271	111	76	-------	111
24	48	44	94	104	83	2,340	271	271	111	76	-------	600
25	58	44	90	100	83	1,925	265	243	111	79	-------	626
26	52	44	90	97	83	1,595	260	219	118	79	-------	329
27	48	44	86	97	86	1,375	255	172	111	111	-------	196
28	46	44	94	94	86	1,166	255	172	104	329	-------	154
29	46	44	94	94	-------	793	243	150	94	463	-------	199
30	46	44	100	97	-------	618	219	146	94	392	-------	234
31	46	-------	100	97	-------	539	-------	146	-------	463	-------	-------

Note.—Discharge Aug. 1 to Sept. 14 not determined, because of no gage height record.

Monthly discharge of Wallenpaupack Creek at Wilsonville, for the year ending September 30, 1923.
(Drainage area 227 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	271	46	72.2	0.318	0.37
November	56	44	46.1	.203	.23
December	100	44	69.5	.306	.35
January	107	94	99.8	.440	.51
February	97	79	85.6	.377	.39
March	2,340	94	688.1	3.03	3.49
April	1,430	219	472	2.08	2.32
May	970	146	377.6	1.66	1.91
June	577	94	193.6	.853	.95
July	463	76	129.2	.569	.66
August					
September 15-30	626	30	173	.762	.45

DELAWARE BASIN—STATION NO. 3

SHOHOLA CREEK NEAR SHOHOLA

Location.—At single-span steel highway bridge about one and three quarter miles south of Shohola, Pike County.

Drainage Area.—82 square miles.

Records Available.—February 19, 1919, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read to tenths once daily by Walter P. Hess.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank is high and not subject to overflow; left is of medium height and overflows during extremely high stages. Bed is composed of coarse gravel and large stones. Control is at first of a series of riffles about 150 feet downstream from gage; probably permanent.

Extremes of Stage.—Maximum gage height during the year, 4.4 feet observed on March 15 and 16; minimum, 1.0 foot from October 1 to 8 and on August 18.

Ice.—Stage-discharge relation probably affected by ice.

Cooperation.—Records furnished by Gannett, Seelye & Fleming, Inc., Engineers, Harrisburg, Pa.

The following discharge measurement was made by J. M. Snavely: No. 6, August 17; Gage height, 1.27 feet; discharge, 17.5 second-feet. Measurement made by wading 75 feet below gage.

Daily Mean Gage Height, in feet, of Shohola Creek near Shohola, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.0	1.1	1.3	2.5	3.8	3.1	2.7	2.6	2.0	1.5	1.9	1.1
2	1.0	1.1	1.3	3.1	3.6	3.1	2.6	2.6	1.9	1.5	1.9	1.2
3	1.0	1.1	1.2	3.1	3.6	3.6	2.6	2.2	1.8	1.6	1.9	1.2
4	1.0	1.3	1.2	3.1	3.4	3.8	2.5	2.2	2.0	1.6	1.8	1.2
5	1.0	1.3	1.2	3.0	3.4	3.8	2.7	2.1	2.0	1.5	1.5	1.2
6	1.0	1.3	1.1	3.0	3.2	3.8	3.0	2.0	2.0	1.5	1.5	1.2
7	1.0	1.3	1.1	2.9	3.2	3.9	3.0	2.0	2.1	1.4	1.5	1.1
8	1.0	1.2	1.6	2.9	3.1	3.9	3.0	2.0	2.1	1.4	1.4	1.3
9	1.5	1.3	1.6	2.9	3.1	3.9	2.9	2.3	2.0	1.4	1.4	1.3
10	1.6	1.3	1.6	2.9	3.1	4.2	2.9	2.3	1.9	1.3	1.3	1.2
11	1.6	1.3	1.6	2.9	3.0	4.2	2.6	2.3	1.9	1.3	1.3	1.2
12	1.6	1.2	1.6	2.9	3.0	4.2	2.6	2.4	1.8	1.3	1.2	1.1
13	1.5	1.2	1.5	2.8	3.0	4.2	2.5	2.5	1.8	1.3	1.2	1.1
14	1.5	1.2	1.5	3.3	3.0	4.3	2.4	2.5	1.7	1.2	1.1	1.1
15	1.3	1.3	1.6	3.4	3.0	4.4	2.2	2.5	1.6	1.2	1.1	1.1
16	1.3	1.3	1.6	3.4	2.9	4.4	2.2	2.4	1.7	1.2	1.2	1.1
17	1.4	1.3	1.7	3.3	2.9	4.0	2.2	2.6	1.6	1.3	1.1	1.1
18	1.4	1.3	1.6	3.6	2.8	3.8	2.1	3.0	1.5	1.3	1.0	1.1
19	1.3	1.3	1.6	3.6	2.8	3.8	2.1	2.8	1.5	1.2	1.2	1.1
20	1.3	1.3	1.6	3.6	2.7	3.6	2.0	2.7	1.6	1.2	1.2	1.1
21	1.2	1.3	1.6	3.7	2.6	3.3	2.0	2.6	1.6	1.1	1.2	1.6
22	1.2	1.2	1.6	3.7	2.6	3.0	2.0	2.6	1.5	1.1	1.1	1.5
23	1.2	1.1	1.5	3.6	2.6	3.3	1.9	2.5	1.5	1.1	1.1	1.7
24	1.3	1.1	1.5	3.6	2.5	3.3	1.9	2.5	1.5	1.2	1.3	1.8
25	1.3	1.1	1.7	3.6	2.5	3.3	1.9	2.5	1.5	1.2	1.3	1.8
26	1.3	1.3	1.7	3.6	2.4	3.3	1.8	2.4	1.4	1.2	1.3	1.7
27	1.2	1.3	1.7	3.5	2.5	3.3	1.8	2.4	1.6	1.2	1.2	1.5
28	1.2	1.3	2.0	3.8	3.2	3.2	1.7	2.4	1.6	2.3	1.1	1.5
29	1.2	1.3	2.0	3.8	-------	3.0	2.6	2.3	1.6	2.5	1.1	1.4
30	1.2	1.3	2.0	3.8	-------	2.8	2.6	2.3	1.5	2.5	1.2	1.4
31	1.2	-------	2.0	3.8	-------	2.8	-------	2.2	-------	2.6	1.1	-------

DELAWARE BASIN—STATION NO. 4

DELAWARE RIVER AT PORT JERVIS, N. Y.

Location.—At two-span steel highway bridge between Matamoras, Pa., and Port Jervis, Orange County, N. Y., one and one-half miles above Neversink River and six miles below Mongaup River.

Drainage Area.—3070 square miles.

Records Available.—October 12, 1904, to September 30, 1923.

Gages.—Chain on downstream side of left span of highway bridge and staff in two sections; the upper section vertical and attached to downstream end of left abutment; the lower section inclined, about 30 feet downstream. Elevation of gage zero 414.89 feet. United States Geological Survey datum. Gages read by John Bisland.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and do not overflow. Bed is composed of gravel; occasionally shifting.

Extremes of Discharge.—Maximum open-water stage recorded during the year, 11.8 feet at 8 a.m. March 24 (discharge, 57,900 second-feet); a stage of 18.5 feet was recorded at 5 p.m. March 7, but the stage-discharge relation was affected by ice; minimum, 1.2 feet on July 24 (discharge, 515 second-feet).

1904-1923: During the flood of October 10-11, 1903, a crest stage of 23.3 feet gage height was observed by Mr. Righter, City Engineer of Port Jervis. This gage height corresponds to approximately 155,000 second-feet. Maximum stage recorded, that of current year; maximum stage for open water, 16.0 feet at 8 a. m. March 28, 1914 (discharge, 92,700 second-feet); minimum stage recorded, 0.60 foot at 8 a. m. September 22 and 23, 1908 (discharge, 175 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation changed presumably at time of breaking of ice jam on March 25, 1923; also affected by ice. Two rating curves used; the first applicable to March 24, 1923, fairly well defined below 2,500 second-feet and well defined between 2,500 and 30,000 second-feet; the second applicable since March 24, 1923, fairly well defined between 500 and 15,000 second-feet. Gage read to tenths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Records good, except for estimated periods which are fair.

Cooperation.—Record furnished by United States Geological Survey Office, Albany, N. Y.

Discharge measurements of Delaware River at Port Jervis, N. Y., during the year ending September 30, 1923.

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.ft.
82	Jan. 24a	B. F. Howe	4.49	6,620
83	Apr. 13	J. L. Lamson	5.17	11,100
84	Aug. 12	A. W. Harrington	1.38	633

a Stage-discharge relation affected by ice.

Daily Mean Gage Height, in feet, of Delaware River at Port Jervis, N. Y., for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.5	1.6	1.7	2.5	-------	5.6	4.6	5.9	2.7	2.0	2.5	2.35
2	1.5	1.5	1.6	4.7	-------	5.8	4.3	5.2	2.6	1.9	2.45	2.05
3	1.5	1.6	1.6	5.6	-------	5.8	4.4	4.6	2.5	1.9	2.25	1.8
4	1.5	1.7	1.6	4.8	-------	6.6	5.1	4.4	2.6	1.8	2.1	1.7
5	1.4	1.7	2.1	4.2	6.6	8.8	7.5	4.0	2.6	1.8	2.15	1.7
6	1.4	1.6	1.9	4.0	6.5	15.8	10.6	3.8	2.7	1.8	2.0	1.8
7	1.4	1.7	1.8	3.8	5.3	18.0	9.5	3.6	3.1	1.7	2.0	1.9
8	1.5	1.7	1.6	3.4	5.0	17.2	8.0	3.6	3.6	1.6	1.9	1.9
9	2.2	1.8	1.5	3.3	5.3	15.8	7.4	4.1	4.2	1.6	1.8	2.05
10	2.35	1.7	1.95	3.1	5.4	15.4	6.7	6.6	4.0	1.5	1.7	3.0
11	2.95	1.8	1.9	3.4	4.8	14.4	5.8	5.8	3.5	1.5	1.5	2.75
12	2.95	1.8	1.9	3.3	4.5	13.9	5.4	5.8	3.2	1.4	1.4	2.4
13	2.55	1.7	1.9	3.2	4.6	12.4	5.2	5.7	2.95	1.4	1.4	2.2
14	2.3	1.7	2.0	2.55	4.8	10.0	4.8	5.6	2.8	1.4	1.4	2.1
15	2.15	1.7	2.1	2.3	4.1	8.4	4.6	5.0	2.7	1.4	1.5	2.0
16	2.0	1.7	2.0	2.6	4.2	7.6	4.3	4.7	2.7	1.4	1.5	1.9
17	1.9	1.65	1.8	2.7	4.4	7.8	4.0	4.9	2.6	1.3	1.5	1.8
18	1.9	1.6	2.1	3.0	4.8	9.8	3.9	4.8	2.35	1.3	1.5	1.8
19	1.9	1.6	2.25	2.8	5.8	8.4	3.8	4.4	2.3	1.4	1.4	1.7
20	1.9	1.7	2.25	2.6	5.9	7.8	3.7	4.2	2.2	1.4	1.4	1.7
21	1.8	1.7	2.3	2.55	6.0	6.6	3.6	4.0	2.1	1.3	1.4	1.8
22	1.7	1.7	2.25	4.0	6.0	6.8	3.5	4.4	2.0	1.3	1.4	2.05
23	1.7	1.6	2.15	5.1	5.8	8.0	3.5	4.0	1.9	1.3	1.4	3.1
24	1.7	1.6	2.15	4.6	5.8	11.0	3.4	3.8	1.9	1.2	1.4	4.0
25	1.9	1.5	2.2	4.5	6.0	9.4	3.3	3.4	1.8	1.3	1.4	3.4
26	1.9	1.5	2.15	4.4	5.6	8.0	3.2	3.2	2.2	1.3	1.3	3.1
27	1.9	1.5	2.15	4.8	5.7	7.1	3.0	3.2	2.2	1.3	1.3	2.8
28	1.8	1.5	2.1	4.6	5.7	6.5	2.95	3.1	2.1	2.8	1.3	2.7
29	1.7	1.5	2.25	4.6	-------	5.4	3.7	3.0	2.2	2.9	2.4	2.6
30	1.7	1.6	2.4	-------	-------	5.3	7.2	2.9	2.1	2.85	2.95	2.6
31	1.6	-------	2.7	-------	-------	5.2	-------	2.8	-------	2.75	2.8	-------

Note.—Stage-discharge relation Dec. 13 to Jan. 2 and Jan. 16 to Mar. 24 affected by ice. Gage heights not observed on days of no record.

Daily discharge, in second-feet, of Delaware River at Port Jervis, N. Y., for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	685	780	880	1,500	]	]	8,510	14,500	2,630	1,360	2,210	1,930
2	685	685	780	7,500	]	]	7,350	11,100	2,410	1,220	2,120	1,440
3	685	780	780	12,600	]	]	7,730	8,510	2,210	1,220	1,760	1,090
4	685	880	780	9,010	]	]	10,600	7,730	2,410	1,090	1,510	970
5	600	880	1,390	6,700	]	]	24,500	6,290	2,410	1,090	1,590	970
6	600	780	1,110	6,010	]	]	48,300	5,630	2,630	1,090	1,360	1,090
7	600	880	990	5,360	]	]	39,500	5,010	3,590	970	1,360	1,220
8	685	880	780	4,180	]	]	28,100	5,010	5,010	860	1,220	1,220
9	1,550	990	685	3,910	]	]	23,800	6,630	6,990	860	1,090	1,440
10	1,800	880	1,180	3,400	]	]	19,000	18,400	6,290	760	970	3,320
11	3,040	990	1,110	4,180	]	]	14,000	14,000	4,710	760	760	2,740
12	3,040	990	1,110	3,910	]	]	12,000	14,000	3,850	670	670	2,070
13	2,160	880	1,100	3,650	]	]	11,100	13,500	3,210	670	670	1,670
14	1,790	880	1,100	2,160	]	]	9,330	13,000	2,850	670	670	1,510
15	1,470	880	1,000	1,720	} 2,600	}12,000	8,510	10,200	2,630	670	760	1,370
16	1,240	880	950	1,500	]	]	7,350	8,910	2,630	670	760	1,220
17	1,110	830	750	1,500	]	]	6,990	9,750	2,410	590	760	1,090
18	1,110	780	750	1,900	]	]	5,950	9,330	1,930	590	760	1,090
19	1,110	780	750	1,700	]	]	5,630	7,730	1,840	670	670	970
20	1,110	880	750	1,800	]	]	5,310	6,990	1,670	670	670	970
21	990	880	750	1,900	]	]	5,010	6,290	1,510	590	670	1,090
22	880	880	750	6,000	]	]	4,710	7,730	1,360	590	670	1,440
23	880	780	750	10,000	]	]	4,710	6,290	1,220	590	670	3,590
24	880	780	850	7,000	]	]	4,410	5,630	1,220	515	670	6,290
25	1,110	685	1,000	5,500	]	38,700	4,130	4,410	1,090	590	670	4,410
26	1,110	685	1,100	5,000	]	28,100	3,850	3,850	1,670	590	590	3,590
27	1,110	685	1,300	5,000	]	21,700	3,330	3,850	1,670	590	590	2,850
28	990	685	1,400	4,400	]	17,800	3,210	3,590	1,510	2,850	590	2,630
29	880	685	1,700	3,600	-------	12,000	5,310	3,330	1,670	3,090	2,020	2,410
30	880	780	1,400	3,000	-------	11,600	22,400	3,090	1,510	2,970	3,210	2,410
31	780	-------	1,700	2,900	-------	11,100	-------	2,850	-------	2,740	2,850	-------

Note.—Discharge Dec. 13 to Jan. 2 and Jan. 16-29 estimated, because of ice, from gage heights corrected for ice effect, by means of one discharge measurement and comparison with records in same drainage area. Discharge Jan. 30 to Mar. 24 estimated, because of ice, by comparison with records of East and West branches and main river at Riegelsville. Braced figures show mean discharge for the period included.

Monthly discharge of Delaware River at Port Jervis, N. Y., for the year ending September 30, 1923.

(Drainage area 3070 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	3,040	600	1,170	0.381	0.44
November	990	685	824	.268	.30
December	1,700	685	1,010	.329	.38
January	12,000	1,500	4,440	1.45	1.67
February			2,600	.847	.88
March	38,700	11,100	13,800	4.50	5.19
April	48,300	3,210	12,100	3.94	4.40
May	18,400	2,850	7,970	2.60	3.00
June	6,990	1,090	2,620	.853	.95
July	3,090	515	1,060	.345	.40
August	3,210	590	1,150	.375	.43
September	6,290	970	2,000	.651	.73
The Year	48,300	515	4,250	1.38	18.77

DELAWARE BASIN—STATION NO. 5

BUSHKILL CREEK NEAR SHOEMAKERS

Location.—At single-span steel highway bridge, about three-quarters of a mile northwest of Shoemakers, Monroe County.

Drainage Area.—115 square miles.

Records Available.—September 19, 1908, to September 30, 1923.

Gage.—Standard chain attached to upstream side of bridge; read by Walter C. Haywood.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of gravel and boulders. Control is at the first of a series of riffles, a short distance below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 3.90 feet observed on March 24 (discharge, about 1,060 second-feet); minimum, 0.95 foot at 7 a. m. November 28 (discharge, 18 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 20 and 100 second-feet and fairly well defined from 100 to 800 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for medium and high stages when they are fair.

Discharge measurements of Bushkill Creek near Shoemakers, during the year ending September 30, 1923.

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.ft.
39	Oct. 5a	H. J. McIntyre	1.03	20.8
40	Aug 18b	do	1.03	24.8

a Measurement made by wading at gage.
b Measurement made by wading 200 feet above gage.

Daily Mean Gage Height, in feet, of Bushkill Creek near Shoemakers, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.04	1.05	1.05	2.10	3.16	2.36	2.52	2.35	1.87	1.31	1.52	1.02
2	1.00	1.05	1.05	2.86	3.08	2.38	2.50	2.26	1.82	1.29	1.45	1.00
3	1.00	1.12	1.04	2.66	3.00	2.48	2.50	2.14	1.80	1.30	1.41	1.00
4	1.00	1.15	1.02	2.50	2.96	2.82	2.50	2.07	1.84	1.31	1.73	1.00
5	1.00	1.15	1.12	2.29	2.92	3.10	2.60	2.02	1.76	1.30	1.64	.98
6	1.00	1.15	1.16	2.12	2.90	3.05	3.14	1.96	1.74	1.29	1.47	1.00
7	1.02	1.16	1.14	2.05	2.88	3.04	2.96	1.91	1.78	1.28	1.38	1.00
8	1.20	1.16	1.28	2.10	2.84	3.00	2.82	1.90	1.95	1.24	1.27	1.00
9	1.34	1.15	1.28	2.20	2.78	2.93	2.74	2.42	1.90	1.18	1.22	1.14
10	1.41	1.14	1.22	2.16	2.75	2.89	2.58	2.56	1.78	1.15	1.18	1.06
11	1.40	1.12	1.05	2.09	2.72	2.85	2.50	2.44	1.72	1.15	1.15	1.05
12	1.30	1.10	1.06	2.06	2.64	2.92	2.42	2.46	1.68	1.15	1.15	1.04
13	1.22	1.10	1.12	2.00	2.38	3.14	2.36	2.62	1.64	1.15	1.18	1.01
14	1.16	1.10	1.28	2.00	2.26	3.20	2.28	2.50	1.61	1.12	1.12	1.00
15	1.14	1.10	1.28	2.02	2.31	3.05	2.23	2.45	1.58	1.02	1.10	.97
16	1.14	1.12	1.27	2.05	2.35	2.92	2.19	2.47	1.54	1.15	1.10	.97
17	1.16	1.14	1.25	2.05	2.35	3.12	2.11	2.56	1.50	1.13	1.09	.97
18	1.16	1.13	1.26	2.02	2.34	3.04	2.08	2.58	1.47	1.12	1.04	.97
19	1.15	1.10	1.30	2.00	2.32	3.16	2.04	2.52	1.44	1.09	1.00	.98
20	1.12	1.12	1.32	2.00	2.30	2.91	1.99	2.52	1.40	1.04	1.00	.98
21	1.08	1.10	1.38	2.31	2.26	2.88	1.96	2.61	1.38	1.04	1.00	1.08
22	1.06	1.10	1.37	3.34	2.24	3.08	1.91	2.67	1.35	1.04	1.03	1.22
23	1.09	1.10	1.35	3.32	2.30	3.39	1.88	2.55	1.34	1.00	1.00	1.38
24	1.08	1.10	1.34	3.34	2.35	3.90	1.82	2.44	1.32	1.00	1.00	1.58
25	1.10	1.09	1.32	3.38	2.35	3.81	1.78	2.34	1.34	1.09	1.00	1.38
26	1.10	1.06	1.34	3.38	2.35	3.62	1.76	2.26	1.37	1.05	.98	1.31
27	1.10	1.00	1.33	3.34	2.35	3.65	1.72	2.17	1.33	1.05	.98	1.24
28	1.09	.98	1.45	3.30	2.36	3.41	1.68	2.11	1.32	1.31	1.04	1.20
29	1.08	1.01	1.47	3.29	-------	2.92	2.44	2.06	1.32	1.98	1.14	1.20
30	1.05	1.05	1.58	3.25	-------	2.82	2.44	2.01	1.30	1.76	1.09	1.20
31	1.05	-------	1.58	3.24	-------	2.65	-------	1.94	-------	1.59	1.04	-------

Note.—Stage-discharge relation Jan. 8 to Mar. 2 and Mar. 6-16 affected by ice.

Daily discharge, in second-feet of Bushkill Creek near Shoemakers, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	23	24	24	220	120	120	405	334	140	43	65	21
2	21	24	24	570	120	180	405	293	126	41	56	21
3	21	28	23	476	130	396	405	238	120	42	52	21
4	21	30	22	405	120	546	405	208	131	43	103	21
5	21	30	28	306	110	687	452	188	110	42	84	20
6	21	30	31	229	110	600	687	167	106	41	59	21
7	22	31	30	200	100	480	616	151	115	40	49	21
8	34	31	40	180	95	400	546	148	164	37	40	21
9	46	30	40	160	95	340	522	367	148	33	36	30
10	52	30	36	150	95	300	452	428	115	30	33	26
11	51	28	24	110	95	300	405	377	101	30	30	24
12	42	27	25	70	95	320	367	386	92	30	30	23
13	36	27	28	50	90	360	339	452	84	30	33	22
14	31	27	40	50	75	400	302	405	78	28	28	21
15	30	27	40	55	65	380	279	382	73	22	27	20
16	30	28	40	55	60	360	260	391	68	30	27	20
17	31	30	38	55	60	687	224	428	62	29	26	20
18	31	29	39	55	60	640	212	452	59	28	23	20
19	30	27	42	55	60	734	196	405	55	26	21	20
20	28	28	44	70	65	593	177	405	51	23	21	20
21	26	27	49	180	70	593	167	452	49	23	21	26
22	25	27	48	460	75	687	151	476	46	23	23	36
23	26	27	46	400	75	828	142	428	46	21	21	49
24	26	27	46	280	65	1,060	126	377	44	21	21	73
25	27	26	44	220	60	1,020	115	330	46	26	21	49
26	27	25	46	180	65	922	110	293	48	24	20	43
27	27	21	45	150	75	922	101	253	45	24	20	37
28	26	20	56	130	95	828	92	224	44	43	23	34
29	26	22	59	130	-------	593	377	204	44	174	30	34
30	24	24	73	120	-------	546	377	184	42	110	26	34
31	24	-------	73	110	-------	476	-------	161	-------	75	23	-------

Note.—Discharge Jan. 8 to Mar. 2 and Mar. 6-16 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for McMichaels Creek near Stroudsburg and Lehigh River at Tannery.

Monthly discharge of Bushkill Creek near Shoemakers, for the year ending September 30, 1923.
(Drainage area 115 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	52	21	29.2	0.254	0.29
November	30	20	27.1	.236	.26
December	73	22	40.1	.349	.40
January	570	50	190	1.65	1.90
February	130	60	85.7	.745	.78
March	1,060	120	558	4.85	5.59
April	687	92	314	2.73	3.05
May	476	148	322	2.80	3.23
June	164	42	81.7	.710	.79
July	174	21	39.7	.345	.40
August	103	20	35.2	.306	.35
September	73	20	28.3	.246	.27
The Year	1,060	20	147	1.28	17.31

DELAWARE BASIN—STATION NO. 6

McMICHAELS CREEK NEAR STROUDSBURG

Location.—At single-span steel railroad bridge, Wilkes-Barre & Eastern R. R. car shops, about three-quarters of a mile southwest of Stroudsburg, Monroe County.

Drainage Area.—62 square miles.

Records Available.—August 10, 1911, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by H. Q. Snyder.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of silt and stones. Control for medium and low stages is at a gravel and boulder bar, where there is a pronounced fall in the stream, about 600 feet below gage; practically permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 6.0 feet at 6 a. m. January 1 (discharge, about 1,160 second-feet); minimum, 2.29 feet several times in September (discharge, 12 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 25 and 150 second-feet and fairly well defined from 150 to 800 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for medium and high stages when they are fair.

Discharge measurements of McMichaels Creek near Stroudsburg, during the year ending September 30, 1923.

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.ft.
41	Oct. 5	H. J. McIntyre	2.67	25.7
42	Aug. 18a	do	2.60	22.4

a Measurement made by wading 200 feet above gage.

Daily Mean Gage Height, in feet, of McMichaels Creek near Stroudsburg, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
	2.64	2.64	2.71	5.36	3.04	2.88	3.44	3.34	3.17	2.86	2.64	-------
	2.64	2.62	2.70	3.87	3.06	2.98	3.44	3.15	3.14	2.88	2.66	-------
	2.64	2.62	2.65	3.29	3.05	3.18	3.44	3.13	-------	2.91	2.68	2.47
	2.62	2.64	2.73	3.17	-------	-------	3.44	3.17	3.17	-------	2.66	2.42
	2.54	2.63	2.73	3.05	2.99	4.41	3.72	3.15	3.15	2.84	-------	2.38
	2.55	2.66	2.69	3.04	2.90	4.04	3.94	-------	3.11	2.83	2.66	2.34
	2.62	2.77	2.67	-------	3.05	-------	3.74	3.14	3.15	2.78	2.64	2.37
	-------	2.66	2.74	2.71	3.05	3.85	-------	3.23	3.36	2.79	2.60	2.38
	2.82	2.62	2.85	3.01	3.06	3.77	3.62	4.12	3.11	2.78	2.58	2.37
	2.82	2.61	-------	3.02	3.06	3.68	3.46	3.79	3.06	2.77	2.58	2.37
	2.77	2.57	2.82	2.98	-------	-------	3.46	3.72	3.06	2.76	2.58	2.36
	2.70	-------	2.75	2.84	3.05	3.67	3.44	3.69	3.03	2.74	2.58	2.36
	2.65	2.62	2.69	2.79	2.94	3.88	3.45	-------	2.98	2.72	2.88	2.34
	2.62	2.62	2.69	-------	2.84	4.05	3.43	3.63	2.93	2.70	2.69	2.31
	-------	2.66	2.79	2.81	2.90	3.84	3.42	3.59	2.94	-------	2.69	2.30
	2.70	2.61	2.73	2.71	2.98	4.65	3.38	3.67	2.91	2.89	2.74	2.29
	2.70	2.58	-------	2.72	3.00	5.17	3.25	3.67	-------	2.72	2.68	2.31
	2.68	2.57	2.75	2.72	-------	5.00	3.21	3.51	2.93	2.64	-------	2.30
	2.67	-------	2.73	2.85	3.00	4.64	3.17	3.47	2.93	2.64	-------	2.30
	2.65	2.58	2.69	3.01	3.01	4.22	3.13	3.45	2.88	2.61	-------	2.30
	2.66	2.60	2.68	3.51	3.00	4.14	3.11	3.83	2.86	2.62	-------	2.61
	2.63	2.60	2.64	3.49	3.02	4.18	-------	3.59	2.86	2.63	-------	2.56
	2.64	2.62	2.59	3.33	3.02	4.24	3.11	3.47	2.86	2.64	-------	-------
	2.61	2.60	2.64	3.34	3.01	4.36	3.05	3.44	-------	2.58	-------	2.58
	2.60	2.58	2.66	3.85	2.83	4.18	2.97	3.41	3.02	2.94	-------	2.38
	2.68	-------	2.69	3.60	2.77	4.05	2.81	3.35	2.88	2.68	-------	2.36
	2.67	2.61	2.69	3.07	2.78	3.97	-------	-------	2.90	2.66	-------	2.38
	2.62	2.62	2.88	-------	2.82	3.85	2.75	3.31	2.87	2.68	-------	2.36
	-------	2.69	2.84	3.06	-------	3.69	3.45	3.25	2.88	-------	-------	2.36
	2.63	2.68	2.69	3.05	-------	3.60	3.45	3.16	2.88	2.74	-------	2.37
	2.66	-------	2.98	3.03	-------	3.50	-------	3.17	-------	2.67	-------	-------

Note.—Gage height not observed on days of no record. Stage-discharge relation Feb. 7-13 and 15-26 affected by ice.

Daily discharge, in second-feet, of McMichaels Creek near Stroudsburg, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	26	31	853	64	46	127	108	81	44	26	18
2	26	25	30	226	66	57	127	78	77	46	28	
3	26	25	27	99	65	82	127	75	80	49	29	18
4	25	26	32	81	60	240	127	81	81	46	28	16
5	21	26	32	65	58	418	185	78	78	42	28	14
6	22	28	29	64	48	290	256	80	72	41	28	13
7	25	36	28	54	48	240	198	78	78	36	26	14
8	32	28	33	31	48	226	180	90	112	37	24	14
9	40	25	43	60	48	198	161	307	72	36	23	14
10	40	25	34	61	46	185	131	211	66	36	23	14
11	36	22	40	57	46	180	131	185	66	35	23	14
12	30	24	34	42	44	173	127	185	63	33	23	14
13	27	25	29	37	44	240	129	170	57	32	46	13
14	25	25	29	38	42	290	125	173	51	30	29	12
15	28	28	37	39	38	226	123	161	52	30	29	12
16	30	25	32	31	30	497	115	173	49	47	33	12
17	30	23	34	32	30	758	93	173	50	32	29	12
18	29	22	34	32	30	667	87	139	51	26	24	12
19	28	24	32	43	30	497	81	133	51	26		12
20	27	23	29	60	30	343	75	129	46	25		12
21	28	24	29	139	30	325	72	226	44	25		25
22	26	24	26	137	30	343	70	161	44	26		22
23	26	25	24	106	32	362	72	133	44	26		24
24	25	24	26	108	30	399	65	127	50	23		23
25	24	23	28	226	30	343	56	121	61	52	16	14
26	29	24	29	161	30	290	39	110	46	29		14
27	28	25	29	67	36	256	34	110	48	28		14
28	25	25	46	65	40	226	34	103	45	29		14
29	26	29	42	66	-------	185	129	93	46	32		14
30	26	29	29	65	-------	161	129	79	46	33		14
31	28	-------	57	63	-------	139	-------	81	-------	28		-------

Note.—Discharge Oct. 8, 15, 29, Nov. 12, 19, 26, Dec. 10, 17, Jan. 7, 14, 28, Feb. 4, Mar.4, 7, 11, Apr. 8, 22, 27, May 6, 13, 27, June 3, 17, 24, July 4, 15, 29, Aug. 5, Aug. 18 to Sept. 2 and Sept. 23 estimated, because of no gage height record, by interpolation and from discharge of Bushkill Creek near Shoemakers. Discharge Feb. 7-13 and 15-26 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Lehigh River at Tannery. Braced figures show mean discharge for the period included.

Monthly discharge of McMichaels Creek near Stroudsburg, for the year ending September 30, 1923.
(Drainage area 62 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	40	21	27.9	0.450	0.52
November	36	22	25.4	.410	.46
December	57	24	32.7	.527	.61
January	853	31	103	1.66	1.91
February	66	30	41.9	.676	.70
March	758	46	287	4.63	5.34
April	256	34	114	1.84	2.05
May	307	75	134	2.16	2.49
June	112	44	60.2	.971	1.08
July	52	23	34.2	.552	.64
August	46	15a	22.8	.368	.42
September	25	12	15.2	.245	.27
The Year	853	12	75.3	1.21	16.49

a Discharge estimated

DELAWARE BASIN—STATION NO. 7

LEHIGH RIVER AT TANNERY

Location.—At single-span steel highway bridge, Tannery, Carbon County.

Drainage Area.—335 square miles.

Records Available.—June 23, 1914, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by G. D. Heimbach. Elevation of gage zero 1,029.41 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and large stones. Control is at a riffle about 300 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 7.8 feet at noon July 28 (discharge, about 6,250 second-feet); minimum, 2.28 feet at 8 a. m. July 22 (discharge, 87 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 130 and 1,000 second-feet and fairly well defined from 1,000 to 3,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for extreme stages when they are fair.

Discharge measurements of Lehigh River at Tannery, during the year ending September 30, 1923.

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.ft.
24	Oct. 4	H. J. McIntyre	2.72	141
25	Aug. 15	J. M. Snavely	3.20	308

Daily Mean Gage Height, in feet, of Lehigh River at Tannery, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.48	2.88	2.90	4.40	3.72	3.48	4.42	3.98	3.34	3.01	4.50	2.85
2	2.64	2.86	2.80	5.22	3.78	3.55	4.32	3.88	3.32	3.02	4.22	2.62
3	2.65	2.91	2.52	4.78	3.76	3.70	4.28	3.68	3.31	2.98	3.90	2.72
4	2.70	2.96	2.76	4.40	3.86	4.62	4.48	3.62	3.50	3.02	3.82	2.72
5	2.62	2.79	2.88	4.12	3.88	5.45	4.83	3.55	3.36	3.15	3.79	2.74
6	2.62	3.02	2.85	4.02	3.99	5.32	5.53	3.51	3.62	3.04	3.68	2.86
7	2.51	2.98	2.78	3.78	4.32	5.10	5.28	3.52	3.65	2.98	3.48	2.82
8	3.14	2.98	2.78	3.66	4.36	4.78	5.10	3.52	4.23	2.92	3.32	2.78
9	3.95	2.99	3.20	3.66	4.32	4.50	4.85	4.92	4.09	2.88	3.28	2.96
10	4.73	2.88	3.07	3.62	3.65	4.42	4.72	5.38	3.98	2.82	3.18	2.95
11	4.43	2.85	2.98	3.52	3.58	4.28	4.55	4.90	3.65	2.98	3.08	2.76
12	4.08	2.82	3.02	3.51	3.52	4.42	4.45	4.92	3.50	2.94	3.01	2.76
13	3.65	2.83	3.00	3.44	3.49	4.60	4.36	5.32	3.45	2.75	3.68	2.64
14	3.48	2.82	2.96	3.38	3.46	4.65	4.28	5.25	3.44	2.62	3.35	2.66
15	3.31	2.82	3.08	3.52	3.49	4.40	4.12	4.95	3.42	2.62	3.16	2.55
16	3.28	2.92	3.09	3.42	3.54	4.78	4.08	4.65	3.48	2.82	3.10	2.45
17	3.34	2.92	3.08	3.41	3.54	5.72	3.92	5.20	3.38	2.78	3.02	2.62
18	3.28	2.84	3.19	3.80	4.28	5.42	3.90	5.02	3.28	2.77	2.88	3.15
19	3.22	2.78	3.35	3.92	4.50	5.68	3.88	4.88	3.22	2.72	2.78	2.78
20	3.28	2.94	3.41	3.65	4.54	5.48	3.82	4.60	3.18	2.68	2.88	2.71
21	3.19	2.91	3.48	3.87	4.38	5.37	3.72	4.68	3.02	2.50	2.82	2.86
22	3.08	2.86	3.48	4.70	3.55	5.48	3.72	4.70	3.01	2.33	2.85	2.88
23	3.04	2.86	3.20	4.69	3.75	6.57	3.75	4.55	2.98	2.73	2.98	3.06
24	3.14	2.79	2.72	4.66	3.85	6.95	3.74	4.44	2.90	2.75	2.94	4.78
25	3.14	2.65	2.82	4.45	3.40	6.62	3.72	3.95	3.35	2.72	2.88	4.40
26	3.14	2.52	2.92	4.20	3.38	5.95	3.68	3.82	3.22	2.62	2.70	3.85
27	3.04	2.78	3.11	4.15	3.42	5.40	3.62	3.72	3.14	2.58	2.86	3.58
28	2.98	2.88	3.16	3.95	3.40	5.10	3.61	3.72	3.18	6.65	2.88	3.52
29	2.86	2.70	3.25	3.88	------	4.88	4.18	3.62	3.29	6.60	3.25	3.42
30	2.88	2.45	3.38	3.86	------	4.75	4.10	3.42	3.22	5.52	3.05	3.36
31	2.91	------	3.39	3.72	------	4.55	------	3.42	------	4.95	2.92	------

Note.—Stage-discharge relation Dec. 13-31, Jan. 12-21, 24-27 and Jan. 30 to Feb. 28 affected by ice.

Daily discharge, in second-feet, of Lehigh River at Tannery, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	103	166	170	1,000	320	371	1,000	680	311	194	1,090	160
2	121	162	150	1,830	380	405	910	610	303	197	830	118
3	122	172	107	1,380	380	485	910	485	299	186	610	134
4	130	182	142	1,000	340	1,180	1,090	430	380	197	545	134
5	118	148	166	750	280	2,070	1,380	405	319	242	545	138
6	118	197	160	680	260	1,956	2,200	380	430	204	485	162
7	106	186	146	545	260	1,710	1,950	380	457	186	371	154
8	239	186	146	457	280	1,380	1,710	380	870	174	303	146
9	645	188	260	457	300	1,090	1,380	1,490	750	166	288	182
10	1,280	166	214	430	280	1,000	1,280	2,070	680	154	253	180
11	1,040	160	186	380	240	910	1,180	1,490	457	186	218	142
12	750	154	197	260	240	1,000	1,040	1,490	380	178	194	142
13	457	166	170	170	260	1,180	955	1,950	358	140	485	121
14	371	154	140	150	280	1,180	910	1,830	353	118	315	124
15	299	154	120	170	200	1,000	750	1,600	344	118	246	110
16	288	174	110	170	170	1,380	750	1,180	371	154	225	100
17	311	174	130	170	170	2,470	610	1,830	327	146	197	118
18	288	158	150	180	170	2,070	610	1,600	288	144	166	242
19	267	146	150	190	170	2,470	610	1,490	267	134	146	146
20	288	178	160	190	170	2,200	545	1,180	253	127	166	132
21	256	172	170	340	180	2,070	485	1,280	197	105	154	162
22	218	162	170	1,280	220	2,200	485	1,280	194	90	160	166
23	204	162	130	1,280	220	3,870	515	1,180	186	136	186	457
24	239	148	110	1,000	180	4,600	515	1,040	170	140	178	1,300
25	239	122	110	800	170	3,870	485	645	315	134	166	1,000
26	239	107	150	700	190	2,900	485	545	267	118	130	578
27	204	146	180	650	220	2,070	430	485	239	113	162	430
28	186	166	220	645	300	1,710	430	485	253	3,870	166	380
29	162	130	190	610	------	1,490	830	430	292	3,870	278	344
30	166	100	150	400	------	1,380	750	371	267	2,200	208	319
31	172	------	160	300	------	1,180	------	344	------	1,600	174	------

Note.—Discharge Dec. 13-31, Jan. 12-21, 24-27 and Jan. 30 to Feb. 28 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Lehigh River at Bethlehem.

Monthly discharge of Lehigh River at Tannery, for the year ending September 30, 1923.
(Drainage area 335 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	1,280	103	311	0.928	1.07
November	197	100	160	.478	.53
December	260	107	159	.475	.55
January	1,830	150	599	1.79	2.06
February	380	170	244	.728	.76
March	4,600	371	1,770	5.28	6.09
April	2,200	430	906	2.70	3.01
May	2,070	344	1,000	2.99	3.45
June	870	170	353	1.05	1.17
July	3,870	90	507	1.51	1.74
August	1,090	130	311	.928	1.07
September	1,380	100	270	.806	.90
The Year	4,600	90	553	1.65	22.40

DELAWARE BASIN—STATION NO. 8

LITTLE LEHIGH CREEK AT ALLENTOWN

Location.—At three-span concrete highway bridge, Lehigh Street, Allentown, Lehigh County, about 2,500 feet above the confluence of Little Lehigh and Jordan creeks.

Drainage Area.—106 square miles.

Records Available.—April 29, 1921, to September 30, 1923.

Gage.—Staff attached to downstream end of left pier; read to hundredths twice daily by Nelson Schantz; during high stages more frequently.

Discharge Measurements.—Made from downstream side of trolley bridge, which is just below the gage, or by wading.

Channel and Control.—Channel is confined by retaining walls and brick buildings. Bed is composed of small gravel. Control is at a riffle a short distance downstream from gage, where the bed is composed of sand and gravel deposited July 20, 1921; shifts occasionally.

Extremes of Stage.—Maximum gage height during the year, 7.00 feet observed at midnight March 3-4; minimum, 0.58 foot at 9 a. m. August 26.

Ice.—Stage-discharge relation not affected by ice since the establishment of station.

Cooperation.—Station is maintained in cooperation with the American Steel and Wire Company.

Discharge measurements of Little Lehigh Creek at Allentown, during the year ending September 30, 1923.

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.ft.
10	Oct. 4	J. M. Snavely	0.78	76.4
11	Dec. 11	H. J. McIntyre	0.85	76.8
12	Sept. 5a	J. M. Snavely	0.72	57.3

a Measurement made by wading at gage.

Daily Mean Gage Height, in feet, of Little Lehigh Creek at Allentown, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.79	0.77	0.78	0.94	0.76	0.91	0.99	1.04	0.87	0.71	0.71	0.65
2	.82	.78	.77	.98	.80	1.08	1.04	.97	.84	.78	.71	.61
3	.81	.79	.71	.80	.82	2.41	1.00	.98	.82	.76	.80	.66
4	.79	.78	.87	.80	.79	3.38	1.03	.98	.87	.71	.74	.66
5	.79	.75	.79	.78	.84	1.76	1.26	.95	.89	.78	.67	.67
6	.80	.83	.76	.79	.76	1.16	1.43	.91	.83	.74	.74	.65
7	.79	.79	.78	.72	.79	.98	1.14	.96	.80	.71	.71	.69
8	.79	.76	.79	.80	.77	.99	1.09	.93	.82	.71	.65	.71
9	.85	.76	.80	.77	.78	.95	1.06	1.42	.82	.74	.66	.64
10	.88	.76	.72	.75	.77	.99	1.05	1.07	.80	.73	.67	.74
11	.93	.77	.80	.82	.72	.97	1.02	1.00	.81	.69	.65	.67
12	.82	.73	.76	.80	.78	1.96	1.02	1.00	.83	.74	.61	.68
13	.82	.82	.74	.80	.85	1.91	1.01	.98	.80	.72	.71	.62
14	.82	.78	.73	.80	.89	1.66	1.03	.99	.79	.72	.71	.66
15	.69	.76	.75	.83	.83	1.27	1.02	.98	.81	.66	.62	.63
16	.83	.79	.77	.77	.80	1.99	1.05	.94	.80	.76	.68	.61
17	.79	.78	.76	.77	.79	2.48	.99	.99	.80	.74	.67	.65
18	.79	.77	.82	.76	.76	1.55	.96	.95	.81	.70	.71	.66
19	.75	.74	.79	.81	.81	1.37	1.02	.93	.79	.69	.60	.68
20	.75	.83	.76	.76	.81	1.15	.96	.92	.78	.70	.74	.65
21	.78	.77	.78	.74	.79	1.23	1.00	1.04	.78	.70	.65	.81
22	.69	.77	.72	1.16	.77	1.22	.99	.98	.77	.65	.68	.79
23	.78	.80	.76	.87	.69	1.20	.97	.95	.78	.73	.70	.68
24	.83	.79	.71	.82	.76	1.28	.92	.90	.73	.70	.65	.78
25	.78	.77	.73	.84	.69	1.16	.91	.90	.81	.76	.70	.73
26	.79	.71	.80	.84	.77	1.15	.93	.91	.74	.72	.59	.69
27	.79	.82	.73	.83	.78	1.08	.95	.86	.78	.73	.68	.65
28	.76	.76	.85	.77	.91	1.09	1.13	.92	.73	.71	.70	.65
29	.74	.74	.95	.81	-------	1.01	1.68	.88	.76	.62	.62	.65
30	.83	.70	.80	.77	-------	1.08	1.10	.83	.79	.71	.66	.65
31	.81	-------	.73	.77	-------	1.07	-------	.85	-------	.70	.64	.61

DELAWARE BASIN—STATION NO. 9

LEHIGH RIVER AT BETHLEHEM

Location.—At nine-span steel highway bridge, three spans over the normal river channel, New Street, Bethlehem, Northampton County, about 800 feet upstream from the mouth of Monocacy Creek and about 5 miles downstream from the mouth of Jordan Creek.

Drainage Area.—1,240 square miles.

Records Available.—September 22, 1902, to February 13, 1905, and April 26, 1909, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by William E. Roberts and Thomas A. Roach. Elevation of gage zero 210.64 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Right bank is high and not subject to overflow; left is low and subject to overflow at high stages. Bed is composed of sand and gravel. Control is at a riffle about 1,000 feet below gage; shifts occasionally. Monocacy Creek enters from left just below the low-water control.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 7.0 feet at 5 a. m. March 17 (discharge, 11,100 second-feet); minimum, 1.22 feet at 4.30 p. m. September 16 (discharge, 330 second-feet).

Ice.—Stage-discharge relation seldom affected by ice.

Diversions.—During navigation season water is diverted past the gage through the Lehigh Coal and Navigation Company Canal, which follows the left bank and passes under the left span of bridge.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 1,800 second-feet and fairly well defined between 1,800 and 31,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good for medium and high stages; only fair for low stages owing to uncertain amount of water diverted by canal.

Discharge measurements of Lehigh River at Bethlehem, during the year ending September 30, 1923.

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.ft.
65	Oct. 4	J. M. Snavely	1.62	443
66	Nov. 1	H. J. McIntyre	1.69	533
67	1	do	1.69	521
68	Dec. 12	do	1.73	480
69	Sept. 5	do	1.56	396

Daily Mean Gage Height, in feet, of Lehigh River at Bethlehem, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	1.70	1.66	2.94	2.34	2.52	3.47	2.96	2.57	1.85	2.65	1.55
2	-------	1.72	1.58	4.32	2.61	2.72	3.47	2.78	2.49	1.80	2.48	1.48
3	-------	1.68	1.68	3.55	2.66	3.61	3.35	2.74	2.37	1.77	2.32	1.46
4	-------	1.68	1.65	3.22	2.58	5.65	3.39	2.63	2.65	1.88	2.26	1.56
5	-------	1.71	1.68	2.92	2.42	6.15	3.69	2.55	2.53	1.90	2.20	1.56
6	-------	1.70	1.76	2.71	2.26	5.24	4.97	2.51	2.42	1.87	2.14	1.59
7	-------	1.69	1.74	2.54	2.30	4.68	4.41	2.51	2.53	1.70	1.97	1.54
8	-------	1.64	1.77	2.35	2.31	4.25	4.00	2.50	2.73	1.67	1.84	1.52
9	-------	1.66	-------	2.54	2.42	3.90	3.99	4.27	2.86	1.66	1.82	1.64
10	-------	1.66	-------	2.37	2.41	3.74	3.85	4.02	2.66	1.59	1.76	1.76
11	-------	1.68	-------	2.20	2.20	3.54	3.57	4.05	2.50	1.75	1.68	1.59
12	-------	1.66	1.72	2.11	2.19	4.51	3.43	3.85	2.38	1.78	1.58	1.56
13	-------	1.70	1.68	2.02	2.23	4.93	3.37	4.23	2.26	1.68	1.80	1.62
14	-------	1.70	1.66	1.72	2.37	4.93	3.25	4.13	2.18	1.63	1.98	1.51
15	-------	1.67	1.76	1.99	2.10	4.47	3.08	3.92	2.26	1.58	1.84	1.38
16	-------	1.63	1.55	2.02	1.95	4.96	3.05	3.83	2.19	1.78	1.72	1.24
17	-------	1.68	1.68	1.80	1.93	6.61	2.94	4.42	2.12	1.73	1.67	1.40
18	-------	1.70	1.78	1.99	1.94	5.94	2.90	4.16	2.10	1.69	1.61	1.54
19	-------	1.62	1.71	2.04	1.93	5.66	2.86	3.86	2.06	1.63	1.57	1.61
20	-------	1.63	1.60	2.05	1.97	5.27	2.83	3.66	2.03	1.49	1.67	1.74
21	-------	1.66	1.59	2.19	2.02	4.82	2.76	4.03	1.98	1.48	1.58	1.93
22	-------	1.68	1.64	3.30	2.12	4.80	2.73	3.99	1.92	1.54	1.61	1.92
23	-------	1.69	1.57	3.40	2.15	5.11	2.72	3.82	1.89	1.53	1.76	2.00
24	-------	1.70	1.58	3.06	1.98	5.88	2.64	3.51	1.83	1.57	1.71	2.60
25	-------	1.70	1.72	3.12	2.02	5.44	2.56	3.27	2.06	1.96	1.59	2.75
26	-------	1.68	1.80	2.93	2.14	4.96	2.50	3.07	2.05	1.79	1.48	2.44
27	-------	1.69	1.74	2.81	2.22	4.51	2.50	3.07	2.05	1.71	1.49	2.22
28	-------	1.62	2.04	2.66	2.48	4.20	2.51	2.97	1.91	1.93	1.63	1.96
29	-------	1.62	2.11	2.69	-------	3.88	3.54	2.84	1.87	4.47	1.68	1.78
30	-------	1.62	1.83	2.52	-------	3.92	3.17	2.72	1.95	3.41	1.71	1.75
31	-------	-------	1.86	2.34	-------	3.70	-------	2.64	-------	2.88	1.70	-------

Note.—Gage heights Oct. 1-23 unsatisfactory; Oct 24-31 and Dec. 9-11 not observed. Stage-discharge relation Jan. 15 and 16 affected by ice.

Daily discharge, in second-feet, of Lehigh River at Bethlehem, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	440	480	455	1,720	1,020	1,180	2,580	1,720	1,240	575	1,250	410
2	450	480	430	4,140	1,290	1,410	2,580	1,530	1,180	540	1,180	390
3	440	480	480	2,760	1,350	2,760	2,410	1,470	1,020	510	970	375
4	480	480	455	2,080	1,290	7,210	2,410	1,350	1,350	610	920	410
5	460	480	480	1,660	1,070	8,880	2,940	1,240	1,240	610	870	410
6	430	480	510	1,410	920	6,210	5,730	1,180	1,070	575	825	430
7	420	480	510	1,240	970	5,040	4,360	1,180	1,240	480	650	410
8	460	455	510	1,020	970	3,930	3,520	1,180	1,470	455	575	390
9	1,550	455	550	1,240	1,070	3,320	3,520	4,140	1,600	455	540	455
10	1,370	455	600	1,020	1,070	2,940	3,130	4,810	1,350	430	510	510
11	2,580	480	550	870	870	2,580	2,760	3,520	1,180	510	480	430
12	1,550	455	480	780	870	4,580	2,410	3,130	1,070	540	430	410
13	1,040	480	480	690	920	5,500	2,410	3,930	920	480	540	430
14	930	480	455	480	1,020	5,500	2,090	3,720	870	455	690	390
15	880	430	480	480	780	4,580	1,930	3,320	920	430	575	360
16	740	455	410	500	650	5,730	1,790	3,130	870	540	480	335
17	740	480	480	540	650	9,950	1,720	4,360	780	510	455	360
18	740	480	540	690	650	8,000	1,660	3,930	780	480	430	410
19	660	430	480	735	650	7,470	1,600	3,320	735	455	410	430
20	660	455	430	735	650	6,450	1,600	2,940	735	390	455	510
21	660	455	430	870	690	5,270	1,470	3,520	690	390	430	650
22	600	480	455	2,240	780	5,270	1,470	3,520	610	410	430	610
23	600	480	410	2,410	825	5,970	1,410	3,130	610	410	510	690
24	600	480	430	1,930	690	8,000	1,350	2,580	575	410	480	1,290
25	550	480	480	1,930	690	6,700	1,240	2,240	735	650	430	1,470
26	550	480	540	1,720	825	5,730	1,180	1,930	735	540	390	1,120
27	550	480	510	1,530	870	4,580	1,180	1,930	735	480	390	870
28	550	430	735	1,350	1,180	3,930	1,180	1,720	610	650	455	650
29	510	430	780	1,410	-------	3,320	2,580	1,600	575	4,580	480	540
30	510	430	575	1,180	-------	3,320	2,090	1,410	650	2,410	480	510
31	480	-------	575	1,020	-------	2,940	-------	1,350	-------	1,660	480	-------

Note.—Discharge does not include the water diverted past the gage through the Lehigh Coal and Navigation Company canal. Canal was closed Dec. 9 to Apr. 15. Discharge estimated Oct. 1-23, because of unsatisfactory gage height record, and Oct. 24-31, because of no gage height record, from United States Weather Bureau gage heights of Lehigh River at Allentown. Discharge estimated Dec. 9-11 because of no gage height record, and Jan. 15 and 16, because of ice

Monthly discharge of Lehigh River at Bethlehem, for the year ending September 30, 1923.
(Drainage area 1,240 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	2,530	420	745	0.601	0.69
November	480	480	466	.376	.42
December	780	410	506	.408	.47
January	4,140	480	1,370	1.10	1.27
February	1,350	650	903	.728	.76
March	9,950	1,180	5,100	4.11	4.74
April	5,730	1,180	2,280	1.84	2.05
May	4,810	1,180	2,580	2.08	2.40
June	1,600	575	938	.756	.84
July	4,580	390	730	.589	.68
August	1,350	390	590	.476	.55
September	1,470	335	555	.448	.50
The Year	9,950	335	1,400	1.13	15.37

Note.—Discharge and run-off does not include the water diverted past the gage through the Lehigh Coal and Navigation Company Canal. Canal was closed Dec. 9 to Apr. 15.

DELAWARE BASIN—STATION NO. 10

DELAWARE RIVER AT RIEGELSVILLE

Location.—At three-span suspension highway bridge between Riegelsville, Bucks County, Pa. and Riegelsville, Warren County, N. J., about 900 feet upstream from mouth of Musconetcong River.

Drainage Area.—6,430 square miles.

Records Available.—July 3, 1906, to September 30, 1923.

Gages.—Staff, in three sections, installed on left bank at upstream side of bridge; lower section inclined, middle and upper sections vertical. Standard chain attached to upstream side of bridge, installed to same datum as staff gage. Gages read by J. H. Brotzman.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and boulders. Control is at a well defined riffle about one-half mile below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, determined from high water marks, 17.8 feet at 9 p. m. March 24 (discharge, 86,100 second-feet); minimum, 1.8 feet at 5 p. m. August 27 (discharge, 1,000 second-feet). 1906-1923: Maximum stage recorded, 25.0 feet March 28, 1913 (discharge, 144,000 second-feet); minimum, 1.55 feet at 8 a. m. September 20, 1908 (discharge, 870 second-feet).

Ice.—Stage-discharge relation not seriously affected by ice.

Diversions.—The Delaware Division of the Pennsylvania Canal diverted about 230 second-feet from the Lehigh River near its mouth from October 1 to December 13, and February 27 to September 30.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined. Gage read to half tenths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Cooperation.—Record furnished by United States Geological Survey Office, Trenton, N. J.

Discharge measurements of Delaware River at Riegelsville, during the year ending September 30, 1923.

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.ft.
35	Oct. 17a	O. Lauterhahn	2.70	2,670
36	July 9b	do	2.31	1,760
37	Aug. 25c	O. W. Hartwell	1.99	1,280

a Measurement also made of discharge in canal, 229 second-feet.
b Measurement also made of discharge in canal, 222 second-feet.
c Measurement also made of discharge in canal, 224 second-feet.

Daily Mean Gage Height, in feet, of Delaware River at Riegelsville, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.25	2.35	2.18	3.65	-------	3.65	7.4	8.40	3.85	2.75	3.55	-------
2	2.25	2.32	2.28	5.60	4.3	3.90	6.5	7.15	3.72	2.65	3.35	-------
3	2.22	2.38	2.30	8.20	4.4	4.50	6.1	6.2	3.6	2.55	3.18	-------
4	2.18	2.35	2.32	6.95	4.6	6.20	6.50	5.6	3.68	2.50	3.00	-------
5	2.18	2.35	2.30	5.90	4.5	7.45	8.45	5.25	3.7	2.62	3.00	2.9
6	2.20	2.40	2.30	5.35	4.2	8.05	13.7	5.0	3.6	2.55	2.95	2.12
7	2.20	2.40	2.40	4.8	4.1	-------	15.75	4.75	3.8	2.45	2.65	2.10
8	2.20	2.40	2.20	4.2	4.1	-------	12.3	4.55	4.2	2.35	2.50	2.15
9	2.42	2.40	2.20	3.9	3.9	7.25	11.05	5.35	4.8	2.35	2.45	2.42
10	3.05	2.38	2.20	4.0	4.3	6.7	9.80	7.8	5.2	2.35	2.30	2.68
11	3.85	2.35	2.45	3.9	4.1	6.3	8.6	8.45	4.58	2.38	-------	3.18
12	3.80	2.30	2.42	4.0	3.9	6.65	7.75	7.45	4.20	2.32	-------	3.12
13	3.60	2.40	2.55	3.8	4.1	7.65	7.3	7.65	3.88	2.28	-------	2.80
14	3.35	2.35	2.50	3.4	4.0	7.90	6.85	8.2	3.65	2.15	2.10	2.55
15	3.00	2.30	2.42	3.2	3.3	7.40	6.4	7.3	3.58	2.00	2.10	2.42
16	2.88	2.40	2.40	3.1	3.4	7.85	6.0	6.75	3.48	2.15	2.05	2.35
17	2.75	2.32	2.45	2.9	3.6	10.85	5.65	7.05	3.4	2.18	1.98	2.20
18	2.68	2.35	2.50	2.9	3.4	11.80	5.3	7.35	3.28	2.10	1.98	2.10
19	2.60	2.30	2.35	3.3	3.3	13.00	5.25	6.7	3.12	2.02	1.95	2.15
20	2.62	2.38	-------	3.2	3.3	11.65	5.00	-------	3.02	2.02	2.08	2.10
21	2.58	2.35	2.45	3.3	3.3	10.45	4.85	6.14	2.88	1.91	2.02	2.45
22	2.50	2.32	2.30	4.0	3.3	10.05	4.7	6.60	2.85	1.85	2.02	2.52
23	2.45	2.30	2.45	4.8	3.3	11.00	4.75	6.1	2.72	1.88	2.05	2.85
24	2.50	2.32	2.45	6.5	3.1	14.90	4.65	5.72	2.75	1.90	2.00	3.50
25	2.40	2.30	2.45	5.6	3.3	15.60	4.55	5.3	2.70	2.08	1.95	4.10
26	2.48	2.20	2.58	5.2	3.3	13.00	4.35	4.95	2.68	2.05	1.88	3.95
27	2.48	2.22	2.60	5.1	3.5	11.40	4.20	4.75	2.62	1.98	1.81	3.60
28	2.48	2.20	2.70	5.3	3.55	10.15	4.05	4.50	2.65	1.95	1.98	3.28
29	2.50	2.12	2.65	-------	-------	9.10	5.2	4.35	2.78	4.15	2.05	2.98
30	2.42	2.10	2.52	-------	-------	8.10	8.95	4.2	2.75	4.25	2.05	2.85
31	2.40	-------	2.65	-------	-------	7.65	-------	3.95	-------	3.85	-------	-------

NOTE.—Gage height Dec. 20, Jan. 29 to Feb. 1, Mar. 7-8, May 20, Aug. 11-13, 31 and Sept. 1-4 not observed. Stage-discharge relation Feb. 20-22 affected by ice.

Daily discharge, in second-feet, of Delaware River at Riegelsville, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,680	1,860	1,590	5,010	6,500	5,010	18,800	23,500	5,610	2,720	4,710	3,900
2	1,680	1,770	1,770	11,600	7,170	5,920	15,000	18,000	5,310	2,480	4,140	3,000
3	1,590	1,960	1,770	22,600	7,490	7,820	18,500	13,900	5,010	2,260	3,860	2,300
4	1,590	1,860	1,770	17,100	8,150	13,900	15,000	11,600	5,310	2,160	3,330	1,900
5	1,590	1,860	1,770	12,700	7,820	18,800	23,500	10,200	5,310	2,370	3,330	1,590
6	1,590	1,960	1,770	10,900	6,850	21,600	56,000	9,500	5,010	2,260	3,200	1,430
7	1,590	1,960	1,960	8,820	6,540	24,000	71,100	8,820	5,610	2,060	2,480	1,430
8	1,590	1,960	1,590	6,850	6,540	20,000	46,400	8,150	6,850	1,860	2,160	1,510
9	1,960	1,960	1,590	5,920	5,920	18,000	38,100	10,900	8,820	1,860	2,060	1,960
10	3,460	1,960	1,590	6,230	7,170	15,800	31,000	20,700	10,200	1,860	1,770	2,600
11	5,610	1,860	2,060	5,920	6,540	14,200	24,500	23,500	8,150	1,960	1,700	3,860
12	5,610	1,770	1,960	6,230	5,920	15,400	20,700	18,800	6,850	1,770	1,600	3,590
13	5,010	1,960	2,260	5,610	6,540	19,700	18,400	19,700	5,920	1,770	1,500	2,840
14	4,140	1,860	2,160	4,420	6,230	21,100	16,300	22,600	5,010	1,510	1,430	2,260
15	3,330	1,770	1,960	3,860	4,140	18,800	14,600	18,400	5,010	1,280	1,430	1,960
16	3,080	1,960	1,960	3,590	4,420	20,700	13,100	16,300	4,710	1,510	1,360	1,860
17	2,720	1,770	2,060	3,080	5,010	36,900	11,600	17,100	4,420	1,590	1,280	1,590
18	2,600	1,860	2,160	3,080	4,420	43,100	10,500	18,800	4,140	1,430	1,280	1,430
19	2,370	1,770	1,860	4,140	4,140	51,100	10,200	15,800	3,590	1,280	1,210	1,510
20	2,370	1,960	2,000	3,860	3,600	41,800	9,500	14,600	3,330	1,280	1,430	1,430
21	2,370	1,860	2,060	4,140	3,400	34,500	8,820	13,500	3,080	1,140	1,280	2,060
22	2,160	1,770	1,770	6,230	3,600	32,100	8,480	15,400	2,960	1,070	1,280	2,160
23	2,060	1,770	2,060	8,820	4,140	38,100	8,820	13,500	2,600	1,140	1,360	2,960
24	2,160	1,770	2,060	15,000	3,630	64,600	8,150	12,000	2,720	1,140	1,280	4,710
25	1,960	1,770	2,060	11,600	4,140	69,700	8,150	10,500	2,600	1,430	1,210	6,540
26	2,160	1,590	2,370	10,200	4,140	51,100	7,490	9,500	2,600	1,360	1,140	5,920
27	2,160	1,590	2,370	9,840	4,710	40,600	6,850	8,820	2,370	1,280	1,000	5,010
28	2,160	1,590	2,600	10,500	5,010	33,300	6,230	7,820	2,480	1,210	1,280	4,140
29	2,160	1,430	2,480	10,000	-------	27,100	10,200	7,490	2,840	6,540	1,360	3,330
30	1,960	1,430	2,160	9,000	-------	22,100	26,600	6,850	2,720	6,850	1,360	2,960
31	1,960	-------	2,480	6,000	-------	19,700	-------	6,230	-------	5,610	3,600	-------

NOTE.—Discharge does not include water diverted past the gage through the Delaware Division of the Pennsylvania Canal. Canal was closed Dec. 14 to Feb. 26. Discharge estimated Dec. 20, Jan. 29 to Feb. 1, Mar. 7-8, May 20, Aug. 11-13, 31 and Sept. 1-4, because of no gage height record, and Feb. 20-22 because of ice.

Monthly discharge of Delaware River at Riegelsville, for the year ending September 30, 1923.
(Drainage area 6,430 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	5,610	1,590	2,530	0.429	0.49
November	1,960	1,430	1,810	.317	.35
December	2,600	1,590	2,000	.327	.38
January	22,600	3,080	8,160	1.27	1.46
February	8,150	3,400	5,490	.857	.89
March	69,700	5,010	28,000	4.39	5.06
April	71,100	6,230	19,300	3.03	3.38
May	23,500	6,230	14,000	2.21	2.55
June	10,200	2,370	4,700	.767	.86
July	6,850	1,070	2,130	.367	.42
August	4,710	1,000	1,980	.344	.40
September	6,540	1,430	2,790	.470	.52
The Year	71,100	1,000	7,750	1.23	16.76

NOTE.—Discharge does not include the water diverted past the gage through the Delaware Division of the Pennsylvania Canal. Canal was closed Dec. 14 to Feb. 26. Run-off includes 230 second-feet, estimated flow in canal, Oct. 1 to Dec. 13 and Feb. 27 to Sept. 30.

DELAWARE BASIN—STATION NO. 11

LITTLE SCHUYLKILL RIVER AT TAMAQUA

Location.—At three-span stone arch highway bridge, Broad Street, Tamaqua, Schuylkill County, about 500 feet upstream from the mouth of Panther Creek.

Drainage Area.—44 square miles.

Records Available.—June 23, 1916, to September 30, 1923.

Gage.—Standard chain attached to upstream side of bridge; read by W. P. Griffiths.

Discharge Measurements.—Made from upstream side of bridge; by wading and at Panther Valley Water Company weir about one-half mile above the gage.

Channel and Control.—Section is entirely walled in above and below the bridge. Banks subject to overflow only during extreme floods. Bed is composed of gravel and rocks. Low-water control is a gravel bar extending diagonally across the channel at downstream side of bridge. Stage-discharge relation not permanent, owing to changes in the gravel bar and lodging of debris and waste on the control.

Extremes of Discharge.—Maximum stage during the year, 3.32 feet observed at 5 p. m. March 16 (discharge, 520 second-feet); minimum, 1.68 feet at 5 p. m. August 16 (discharge, 6.7 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Diversions.—The Panther Valley Water Company pumps water from the stream about one-half mile above the gaging station for mine service, which is returned to the stream below the gaging station.

Accuracy.—Stage-discharge relation changed during high flow in early part of March 1923; also affected by ice. Two rating tables were used; one applicable to March 5, 1923; the other since that date. Rating curves well defined below 25 second-feet and fairly well defined between 25 and 300 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Discharge measurements of Little Schuylkill River at Tamaqua, during the year ending September 30, 1923.

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.ft.
36	Oct. 3a	H. J. McIntyre	1.75	5.50
37	5b	Panther Valley Water Co.	1.74	4.92
38	14b	do	1.85	10.8
39	24b	do	1.88	9.73
40	28b	do	1.88	11.1
41	Nov. 3b	do	1.78	7.65
42	10b	do	1.80	7.17
43	17b	do	1.80	7.43
44	25b	do	1.78	6.25
45	Dec. 1b	do	1.81	6.15
46	26b	do	1.90	13.4
47	July 13b	do	1.84	14.67
48	16b	do	1.87	13.12
49	July 20b	do	1.79	10.50
50	24b	do	1.80	17.52
51	27b	do	1.74	10.26
52	31b	do	1.86	13.76
53	Aug. 3b	do	1.80	11.61
54	7b	do	1.78	10.88
55	13b	do	1.86	14.21
56	16b	do	1.69	7.57
57	18b	do	1.70	8.53
58	20b	do	1.78	9.87
59	22b	do	2.04	28.32
60	28b	do	1.82	10.07
61	31b	do	1.72	8.82
62	Sept. 4c	J. M. Snavely	1.78	12.2
63	4c	do	1.78	12.7
64	4b	Panther Valley Water Co.	1.78	9.03
65	7b	do	1.81	10.71
66	11b	do	1.78	9.00
67	14b	do	1.74	7.90
68	18b	do	1.91	7.54
69	24b	do	2.06	18.57
70	28b	do	1.91	17.35

a Measurement made by wading 300 feet below gage.
b Measurement made by weir a short distance above the Panther Valley Water Company's pumping station, about one-half mile above the gage. The amount of pumpage was deducted from the quantity measured at the weir and the gage height at the gaging station was used.
c Measurement made by wading 200 feet below gage.

Daily Mean Gage Height, in feet, of Little Schuylkill River at Tamaqua, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.78	1.79	1.81	2.67	2.53	2.48	2.34	2.26	2.24	1.95	1.82	1.76
2	1.77	1.78	1.80	2.52	2.28	2.44	2.32	2.23	2.24	1.91	1.82	1.79
3	1.74	1.78	1.85	2.37	2.29	2.61	2.32	2.21	2.22	1.96	1.80	1.78
4	1.74	1.79	1.88	2.31	2.23	2.87	2.36	2.20	2.19	1.92	1.83	1.78
5	1.74	1.80	1.93	2.26	2.14	3.20	2.48	2.18	2.15	1.97	1.80	1.78
6	1.76	1.79	1.85	2.24	2.96	3.08	2.46	2.18	2.15	1.91	1.76	1.86
7	1.88	1.83	1.92	2.33	2.92	3.03	2.38	2.16	2.16	1.89	1.78	1.81
8	2.34	1.80	1.96	2.43	2.73	2.86	2.34	2.16	2.15	1.87	1.83	1.86
9	2.12	1.79	1.89	2.22	2.45	2.57	2.31	2.56	2.12	1.85	1.78	1.81
10	2.27	1.80	1.95	2.15	2.24	2.53	2.29	2.44	2.08	1.85	1.75	1.79
11	2.03	1.80	1.98	2.21	2.26	2.76	2.28	2.38	2.05	1.88	1.74	1.78
12	1.91	1.80	1.88	2.13	2.29	2.88	2.26	2.38	2.07	1.85	1.79	1.79
13	1.85	1.79	1.74	2.21	2.26	2.88	2.26	2.65	2.07	1.84	1.86	1.75
14	1.85	1.80	1.85	2.24	2.24	2.85	2.26	2.59	2.05	1.86	1.73	1.74
15	1.84	1.83	1.90	2.28	3.07	2.76	2.24	2.51	2.09	1.85	1.76	1.74
16	1.80	1.80	1.87	2.17	3.08	3.10	2.22	2.53	2.05	1.87	1.69	1.80
17	1.80	1.80	1.88	2.19	2.84	3.26	2.21	2.46	2.03	1.84	1.70	1.91
18	1.85	1.81	1.88	2.20	2.71	3.18	2.20	2.38	2.02	1.87	1.70	1.91
19	1.80	1.80	1.88	2.20	2.63	3.09	2.19	2.38	2.00	1.82	1.78	1.76
20	1.76	1.79	1.88	2.19	2.60	2.85	2.17	2.32	2.00	1.79	1.78	1.75
21	1.78	1.80	1.87	2.56	2.58	2.83	2.16	2.88	1.98	1.80	1.70	1.97
22	1.79	1.78	1.88	2.72	2.56	2.78	2.15	2.60	1.98	1.78	2.04	1.90
23	1.80	1.78	1.87	2.50	2.53	2.86	2.14	2.53	2.00	1.76	1.77	2.06
24	1.88	1.79	1.88	2.82	2.53	2.87	2.12	2.52	1.98	1.80	1.74	2.10
25	1.85	1.78	1.88	2.62	2.53	2.76	2.10	2.44	1.95	1.93	1.75	1.90
26	1.84	1.78	1.90	2.52	2.67	2.63	2.10	2.42	1.98	1.78	1.73	1.81
27	1.85	1.80	1.93	2.51	2.57	2.58	2.07	2.37	2.04	1.74	1.72	1.86
28	1.88	1.84	2.08	-------	2.49	2.52	2.11	2.34	2.00	1.89	1.82	2.00
29	1.86	1.84	2.21	-------	-------	2.49	2.22	2.32	2.04	1.88	1.83	1.84
30	1.82	1.80	2.19	-------	-------	2.46	2.27	2.28	2.00	1.85	1.73	1.79
31	1.77	-------	2.16	-------	-------	2.40	-------	2.26	-------	1.86	1.72	-------

Note.—Stage-discharge relation Dec. 30, 31, and Jan. 4 to Mar. 3 affected by ice. Gage height Jan. 28-31 not observed.

Daily discharge, in second-feet, of Little Schuylkill River at Tamaqua, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.4	6.7	7.3	200	24	60	97	75	70	22	12	10
2	6.1	6.4	7.0	145	38	85	91	68	70	18	12	10
3	5.5	6.4	8.8	106	50	130	91	62	65	23	11	10
4	5.5	6.7	11	70	40	280	103	60	58	18	12	10
5	5.5	7.0	15	50	24	460	139	56	51	24	11	10
6	5.9	6.7	8.8	38	24	400	133	56	51	18	8.9	14
7	11	8.0	14	32	32	375	109	53	53	16	10	11
8	97	7.0	18	32	40	280	97	53	51	15	12	14
9	44	6.7	11	38	40	162	88	162	45	13	10	11
10	78	7.0	17	40	40	162	82	127	40	13	8.6	10
11	29	7.0	21	32	32	240	80	109	35	15	8.2	10
12	13	7.0	11	22	24	300	75	109	38	13	10	10
13	8.8	6.7	5.5	17	24	300	75	200	38	13	14	8.6
14	8.8	7.0	8.8	17	32	280	75	180	35	14	7.9	8.2
15	8.4	8.0	12	17	40	240	70	145	41	13	8.9	8.2
16	7.0	7.0	10	20	50	400	65	162	35	15	6.9	11
17	7.0	7.0	11	20	50	490	62	133	22	13	7.1	13
18	8.8	7.3	11	17	32	460	60	109	31	15	7.1	18
19	7.0	7.0	11	17	24	400	58	109	28	12	10	8.9
20	5.9	6.7	11	24	32	280	54	91	28	10	10	8.6
21	6.4	7.0	10	40	38	280	53	300	25	11	7.1	24
22	6.7	6.4	11	85	40	260	51	180	25	10	34	17
23	7.0	6.4	10	50	32	280	49	162	28	8.9	9.4	37
24	11	6.7	11	60	24	280	45	145	25	11	8.2	42
25	8.8	6.4	11	90	24	240	42	127	22	19	8.6	17
26	8.4	6.4	12	80	24	200	42	121	25	10	7.9	11
27	8.8	7.0	15	60	32	180	38	106	34	8.2	7.6	14
28	11	8.4	37	44	40	145	44	97	28	10	12	28
29	9.4	8.4	62	40	-------	142	65	91	34	15	12	13
30	7.6	7.0	38	32	-------	133	78	80	28	13	7.9	10
31	6.1	------	32	28	-------	115	-------	75	-------	14	7.6	-------

Note.—Discharge does not include the quantity of water diverted by the Panther Valley Water Company. Discharge Dec. 30, 31 and Jan. 4 to Mar. 3 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Schuylkill River at Reading and Nescopeck Creek near St. Johns.

Monthly discharge of Little Schuylkill River at Tamaqua, for the year ending September 30, 1923.
(Drainage area 44 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	97	5.5	14.8	0.384	0.44
November	8.4	6.4	6.98	.212	.24
December	62	5.5	15.5	.398	.46
January	200	17	50.4	1.20	1.38
February	50	24	33.8	.809	.84
March	490	60	259	5.93	6.84
April	139	38	73.7	1.72	1.92
May	300	53	116	2.68	3.09
June	70	22	39.0	.920	1.03
July	24	8.2	14.5	.368	.42
August	34	6.9	10.3	.277	.32
September	42	8.2	14.4	.364	.41
The Year	490	5.5	54.5	1.28	17.39

Note.—Discharge does not include the quantity of water diverted by the Panther Valley Water Co. Run-off does include the quantity of water diverted.

DELAWARE BASIN—STATION NO. 12

SCHUYLKILL RIVER AT READING

Location.—At concrete viaduct, Penn Street, Reading, Berks County.

Drainage Area.—900 square miles.

Records Available.—May 6, 1914, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by H. J. Kline. Elevation of gage zero 188.50 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank is high and not subject to overflow; left is low and stream begins to overflow the canal tow-path at a stage of 6.8 feet. Bed is composed of gravel. Low-water control is at a slight riffle about 700 feet below gage; may shift occasionally. Control for high stages is probably at the Pennsylvania Railroad bridge about 900 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 5.8 feet at 6 a. m. March 4 and 10 a. m. March 5 (discharge, 10,000 second-feet); minimum, —0.96 foot at 5.20 p. m. August 21 and 22 (discharge, 115 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Diversions.—During navigation season water is diverted past the gage through the Schuylkill Navigation Company canal, which follows along the left bank.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined below 15,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for low stages, when they are fair, owing to uncertain quantity of water diverted by canal.

Discharge measurements of Schuylkill River at Reading, during the year ending September 30, 1923.

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
52	Oct. 2	J. M. Snavely,	—0.60	208
53	2	do	—0.59	263
54	Dec. 11	H. J. McIntyre,	—0.64	199
55	Sept. 4	do	—0.59	202

a Measurement made by wading 400 feet below gage.

Daily Mean Gage Height, in feet, of Schuylkill River at Reading, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept
1	—0.55	—0.45	—0.55	0.83	0.07	1.67	0.90	0.64	0.42	—0.51	—0.45	—0.64
2	—.57	—.46	—.54	2.66	.47	1.65	.98	.50	.33	—.43	—.58	—.76
3	—.61	—.44	—.59	1.56	.63	3.34	1.00	.40	.37	—.45	—.56	—.77
4	—.62	—.45	—.75	1.15	.79	5.26	.76	.36	.35	—.37	—.55	—.64
5	—.64	—.48	—.42	.80	.45	5.42	.98	.40	.30	—.31	—.48	—.80
6	—.64	—.45	—.32	.64	.05	4.19	2.54	.35	.23	—.35	—.55	—.56
7	—.67	—.40	—.40	.42	.18	3.49	1.71	.51	.00	—.52	—.64	—.29
8	—.55	—.40	—.48	.20	.29	2.81	1.51	.27	.13	—.58	—.66	—.56
9	—.08	—.42	—.34	.45	.42	2.24	1.44	2.67	.03	—.48	—.76	—.51
10	.33	—.50	—.53	.47	.37	2.01	1.10	2.17	—.13	—.54	—.74	—.52
11	.72	—.57	—.73	.00	.22	1.84	1.11	1.70	—.05	—.51	—.74	—.60
12	.05	—.60	—.46	—.01	.13	3.46	.98	1.51	.00	—.48	—.75	—.72
13	—.20	—.50	—.70	—.29	.27	4.47	.93	2.04	—.01	—.19	—.60	—.72
14	—.28	—.49	—.61	—.38	.85	4.38	1.05	1.59	—.04	—.55	—.52	—.74
15	—.30	—.45	—.50	—.15	.92	3.75	.78	1.34	—.10	—.81	—.74	—.82
16	—.35	—.42	—.64	.01	.89	3.80	.71	1.33	—.22	—.52	—.76	—.95
17	—.38	—.38	—.45	—.33	.99	5.30	.67	2.15	—.28	—.46	—.88	—.78
18	—.40	—.45	—.54	—.42	.61	4.62	.56	1.41	—.25	—.54	—.81	—.79
19	—.40	—.52	—.59	—.34	.59	4.09	.54	1.25	—.25	—.68	—.52	—.78
20	—.40	—.46	—.50	—.24	.26	3.25	.48	.96	—.29	—.68	—.75	—.40
21	—.40	—.48	—.51	—.07	.37	2.91	.36	1.91	—.33	—.75	—.90	.89
22	—.49	—.51	—.56	1.40	.35	2.58	.32	2.73	—.36	—.86	—.91	.88
23	—.45	—.50	—.55	1.53	.07	2.58	.28	2.15	—.40	—.71	—.48	.78
24	—.38	—.55	—.65	.99	.07	2.81	.20	1.79	—.46	—.74	—.72	2.12
25	—.36	—.68	—.58	1.28	.11	2.28	.06	1.50	—.15	—.40	—.84	.99
26	—.33	—.78	—.45	1.05	.15	2.02	.26	1.27	—.34	—.21	—.84	.56
27	—.40	—.56	—.50	.83	.34	1.84	.14	1.11	—.43	—.54	—.81	.21
28	—.50	—.55	.06	.63	1.29	1.58	.06	.96	—.46	—.34	—.68	.08
29	—.54	—.55	.77	.59	-------	1.27	1.58	.80	—.47	—.54	—.11	—.02
30	—.50	—.54	—.05	.37	-------	1.30	.96	.65	—.39	—.41	—.34	—.25
31	—.40	-------	—.25	.09	-------	1.38	-------	.47	-------	—.32	—.56	-------

NOTE.—Stage-discharge relation Dec. 20 and Feb. 16-20 affected by ice.

Daily discharge, in second-feet, of Schuylkill River at Reading, for the year ending September 30 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept
1	215	250	215	930	465	1,720	1,000	790	660	227	250	188
2	209	250	218	3,200	690	1,610	1,080	720	630	250	206	154
3	197	250	203	1,610	790	4,410	1,080	660	630	250	212	152
4	194	250	157	1,240	930	8,820	930	630	630	290	215	188
5	188	230	270	930	690	9,060	1,080	660	600	310	230	145
6	188	250	310	790	465	6,320	2,860	630	570	290	215	212
7	179	270	270	660	540	4,830	1,720	720	440	224	188	310
8	215	270	230	540	600	3,400	1,510	570	515	206	182	212
9	390	270	290	690	660	2,400	1,420	3,200	465	230	154	227
10	630	230	221	690	630	2,100	1,160	2,400	370	218	160	224
11	860	209	162	440	540	1,840	1,160	1,720	415	227	160	206
12	465	200	250	440	515	4,830	1,080	1,510	440	230	157	164
13	350	230	170	310	570	6,980	1,000	2,100	440	350	200	164
14	310	230	197	270	930	6,760	1,080	1,610	415	215	224	160
15	310	250	230	370	1,000	5,460	930	1,330	390	143	160	140
16	290	270	188	440	800	5,460	860	1,330	350	224	154	117
17	270	270	250	290	550	8,820	860	2,400	310	250	128	150
18	270	250	218	270	500	7,200	790	1,420	330	218	143	147
19	270	224	203	290	460	6,100	720	1,240	330	176	224	150
20	270	250	220	330	500	4,200	720	1,080	310	176	157	270
21	270	230	227	415	630	3,600	630	1,970	290	157	125	1,000
22	230	227	212	1,420	630	3,020	600	3,200	290	132	123	1,000
23	250	230	215	1,510	465	3,020	600	2,400	270	167	230	930
24	270	215	185	1,080	465	3,400	540	1,840	250	160	164	2,250
25	290	176	206	1,330	490	2,550	465	1,510	370	270	136	1,080
26	290	150	250	1,080	515	2,100	570	1,330	290	350	136	790
27	270	212	230	930	630	1,840	515	1,160	250	218	143	540
28	230	215	465	790	1,230	1,610	465	1,080	250	290	176	490
29	218	215	930	790	-------	1,330	1,610	930	259	218	390	440
30	230	218	415	630	-------	1,330	1,080	790	270	270	290	330
31	270	-------	330	490	-------	1,420	-------	690	-------	310	212	-------

Note.—Discharge does not include the water diverted past the gage through Schuylkill Navigation Company Canal. Canal was closed Nov. 28 to June 15. Discharge Dec. 20 and Feb. 16-20 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Swatara Creek at Harpers and Lehigh River at Bethlehem.

Monthly discharge of Schuylkill River at Reading, for the year ending September 30, 1923.
(Drainage area 900 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	860	179	293	0.326	0.38
November	270	150	233	.259	.29
December	930	157	262	.291	.34
January	3,200	270	813	.903	1.04
February	1,330	460	642	.713	.74
March	9,060	1,330	4,110	4.57	5.27
April	2,860	465	1,000	1.11	1.24
May	3,200	570	1,410	1.57	1.81
June	660	250	401	.446	.50
July	350	132	234	.260	.30
August	390	123	189	.210	.24
September	2,250	117	417	.463	.52
The Year	9,060	117	839	.932	12.67

Note.—Discharge and run-off does not include the water diverted past the gage through Schuylkill Navigation Company Canal. Canal was closed Nov. 28 to June 15.

DELAWARE BASIN—STATION NO. 13

PERKIOMEN CREEK AT GRATERS FORD

Location.—At two-span steel highway bridge, Graters Ford, Montgomery County.

Drainage Area.—280 square miles.

Records Available.—June 11, 1914, to September 30, 1923.

Gages.—Standard chain attached to upstream side of bridge and inclined staff installed in August 1921 on left bank 1,700 feet upstream from the chain gage. Both gages are read to hundredths twice daily by C. K. Kulp. The elevation of the staff gage is 3.23 feet above that of the chain gage.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and rock. Low stages at the chain gage are affected by backwater from the dam at Ironbridge. Control for low stages at the staff gage is at a riffle about 200 feet

below the gage, where the bed is composed of gravel and large stones; probably permanent. Control for medium and high stages, for both gages, is the dam at Ironbridge.

Extremes of Stage.—Chain gage. Maximum gage height during the year, estimated from hydrograph, 8.1 feet at 8 p. m. March 16; minimum, 1.80 feet at 8.30 a. m. July 6.

Staff Gage. Maximum gage height during the year, estimated from hydrograph, 5.8 feet at 8 p. m. March 16; minimum, 1.00 foot at 5 p. m. December 1 and at 8.30 a. m. June 27.

Ice.—Stage-discharge relation usually affected by ice.

Regulation.—Stage-discharge relation during low stages at the chain gage is affected by operation of grist mill at Ironbridge.

Discharge measurements of Perkiomen Creek at Graters Ford, during the year ending September 30, 1923.

No.	Date	Made by	Staff Gage height	Discharge
			Feet	Sec.ft.
44	Dec. 12	H. J. McIntyre	1.34	73.4
45	Sept. 6a	do	1.16	45.0

a Measurement made by wading 700 feet below gage.

Daily Mean Gage Height, in feet, of Perkiomen Creek at Graters Ford (chain gage), for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.02	2.36	2.11	4.30	3.16	3.95	3.32	4.19	2.83	2.60	3.83	3.74
2	3.01	2.32	2.14	4.57	3.30	4.02	3.28	4.12	2.88	2.52	3.64	3.68
3	2.94	2.36	2.18	4.18	3.28	4.10	3.26	3.99	2.84	2.47	3.64	3.54
4	2.63	2.44	2.24	4.08	3.26	4.42	3.52	3.91	2.73	2.71	4.26	3.50
5	2.53	2.44	2.39	3.92	3.17	4.40	3.97	3.82	2.25	2.60	4.71	3.41
6	2.40	2.44	2.44	3.87	3.24	4.60	4.52	3.69	2.20	2.02	3.86	3.02
7	2.42	2.42	2.48	3.78	3.23	4.66	4.40	3.56	2.32	2.47	3.82	2.92
8	2.51	2.40	2.54	3.83	3.23	4.56	4.34	3.50	2.58	2.66	3.86	3.67
9	2.50	2.50	2.49	3.74	3.14	4.39	4.28	3.70	3.12	2.35	3.78	4.20
10	2.70	2.44	2.58	3.70	3.22	4.47	4.19	3.76	3.22	2.86	3.80	3.95
11	2.88	2.56	2.64	3.62	3.32	4.44	4.10	3.61	3.03	2.86	3.85	3.90
12	2.90	2.59	2.70	3.54	3.26	5.17	4.10	3.72	2.63	2.92	4.40	3.92
13	2.75	2.56	2.59	3.58	3.40	5.75	4.23	4.15	2.66	2.30	4.48	3.97
14	2.68	2.51	2.48	3.52	3.28	5.52	4.41	4.01	2.52	2.64	4.05	3.84
15	2.72	2.51	2.50	3.59	3.20	4.91	4.53	3.74	2.24	2.68	3.94	3.80
16	2.60	2.67	2.47	3.44	3.18	6.49	4.23	3.66	2.54	2.52	3.74	3.76
17	2.50	2.57	2.59	3.40	3.08	7.75	4.04	4.00	2.81	2.46	3.76	3.66
18	2.51	2.60	2.60	3.38	3.04	6.98	3.98	3.88	2.82	2.52	3.80	3.58
19	2.42	2.60	2.61	3.28	2.98	6.22	3.86	3.82	2.46	2.30	3.84	3.80
20	2.40	2.52	2.56	3.29	2.99	5.24	3.80	3.84	2.21	2.40	3.90	3.75
21	2.52	2.52	2.46	3.34	3.04	4.68	3.77	4.04	2.10	2.52	3.80	3.86
22	2.52	2.40	2.44	3.24	3.10	4.30	3.72	4.08	2.02	2.56	3.76	4.82
23	2.46	2.31	2.44	3.21	2.98	4.65	3.64	3.90	2.15	4.02	3.60	4.94
24	2.52	2.35	2.46	3.28	2.94	5.07	3.60	3.60	2.50	3.92	3.58	4.58
25	2.50	2.25	2.43	3.32	2.95	4.30	3.51	3.46	2.44	3.86	3.56	4.15
26	2.49	2.30	2.43	3.24	2.85	4.02	3.52	3.48	2.44	3.38	3.75	3.90
27	2.52	2.24	2.38	3.19	3.04	3.84	3.48	3.42	2.30	3.38	3.78	3.86
28	2.54	2.28	3.23	3.17	3.66	3.71	3.67	3.32	2.26	3.74	4.08	3.80
29	2.44	2.18	3.60	3.20	-------	3.51	5.30	3.36	2.46	4.03	4.02	3.76
30	2.37	2.17	3.16	3.18	-------	3.37	4.34	3.20	2.52	3.81	3.88	3.70
31	2.32	-------	3.02	3.21	-------	3.34	-------	2.94	-------	3.69	3.74	-------

Note.—Stage-discharge relation Dec. 2 to Mar. 4 affected by ice.

Daily Mean Gage Height, in feet, of Perkiomen Creek at Graters Ford (staff-gage), for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.11	1.06	1.02	2.24	1.32	2.74	2.18	2.04	1.30	1.07	1.34	1.27
2	1.11	1.08	1.02	2.30	1.35	2.90	2.18	1.85	1.32	1.09	1.33	1.24
3	1.05	1.06	1.06	2.14	1.38	2.97	2.14	1.72	1.30	1.13	1.32	1.17
4	1.06	1.12	1.08	2.08	1.31	3.12	2.20	1.67	1.27	1.21	1.70	1.20
5	1.05	1.16	1.12	2.02	1.28	3.04	2.39	1.64	1.34	1.21	2.25	1.15
6	1.10	1.19	1.17	2.04	1.30	3.16	2.90	1.57	1.27	1.14	1.49	1.14
7	1.15	1.24	1.23	2.00	1.25	3.27	2.65	1.52	1.32	1.18	1.35	1.16
8	1.06	1.26	1.24	1.92	1.24	3.28	2.52	1.51	1.32	1.30	1.35	1.38
9	1.08	1.24	1.30	1.87	1.31	3.12	2.46	1.68	1.32	1.24	1.30	1.58
10	1.10	1.22	1.30	1.82	1.32	3.18	2.28	1.68	1.34	1.12	1.36	1.50
11	1.18	1.26	1.31	1.74	1.37	3.12	2.10	1.60	1.30	1.12	1.35	1.38
12	1.20	1.23	1.34	1.72	1.36	3.58	2.02	1.69	1.24	1.22	2.28	1.35
13	1.13	1.24	1.34	1.60	1.44	3.86	2.10	2.41	1.18	1.04	2.38	1.45
14	1.09	1.24	1.30	1.56	1.40	3.76	2.24	1.72	1.19	1.10	1.60	1.47
15	1.11	1.28	1.34	1.56	1.32	3.41	2.32	1.64	1.18	1.16	1.44	1.40
16	1.08	1.34	1.30	1.50	1.25	4.44	2.10	1.62	1.19	1.16	1.34	1.38
17	1.12	1.36	1.36	1.48	1.24	4.99	1.90	1.73	1.18	1.18	1.37	1.36
18	1.12	1.35	1.32	1.50	1.23	4.15	1.78	1.70	1.20	1.10	1.40	1.31
19	1.14	1.33	1.34	1.44	1.24	3.40	1.74	1.69	1.26	1.16	1.40	1.36
20	1.12	1.38	1.30	1.44	1.21	2.50	1.67	1.68	1.14	1.12	1.41	1.34
21	1.17	1.36	1.32	1.42	1.26	2.22	1.62	1.87	1.22	1.16	1.31	1.42
22	1.16	1.30	1.29	1.40	1.29	2.05	1.64	1.88	1.16	1.19	1.30	1.82
23	1.14	1.23	1.26	1.34	1.26	2.42	1.61	1.68	1.20	1.70	1.24	2.02
24	1.16	1.19	1.28	1.35	1.25	3.10	1.54	1.59	1.12	1.42	1.22	1.99
25	1.17	1.15	1.25	1.42	1.29	2.89	1.50	1.50	1.08	1.40	1.24	1.87
26	1.18	1.14	1.25	1.34	1.30	2.74	1.48	1.52	1.05	1.28	1.28	1.78
27	1.14	1.10	1.26	1.28	1.42	2.51	1.48	1.51	1.02	1.29	1.32	1.70
28	1.10	1.10	1.73	1.30	2.42	2.35	1.78	1.48	1.08	1.41	1.46	1.59
29	1.10	1.06	1.80	1.26	-------	2.26	3.36	1.43	1.10	1.48	1.46	1.52
30	1.10	1.06	1.58	1.26	-------	2.24	2.30	1.40	1.09	1.46	1.40	1.47
31	1.05	-------	1.49	1.24	-------	2.20	-------	1.36	-------	1.41	1.31	-------

Note.—Stage-discharge relation Dec. 2 to Mar. 4 affected by ice.

DELAWARE BASIN—STATION NO. 14

SCHUYLKILL RIVER AT CONSHOHOCKEN

Location.—At ten-span concrete highway bridge between Conshohocken and West Conshohocken, Montgomery County.

Drainage Area.—1,800 square miles.

Records Available.—June 8, 1914, to May 31, 1916, and October 18, 1921, to December 31, 1922, when the station was discontinued.

Gage.—Standard chain attached to downstream side of bridge; read to hundredths twice daily by O. R. Tomlinson. Elevation of gage zero 34.83 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of fine and coarse gravel. Control is Flat Rock Dam about five miles below the gage. Stage-discharge relation

is affected by use of flashboards and operation of power plant at Flat Rock Dam.

Extremes of Stage.—Maximum gage height during the period October 1 to December 31, 4.20 feet observed at 9.10 a. m. December 29; minimum, 2.33 feet at 5.40 p. m. October 4.

Ice.—Stage-discharge relation rarely affected by ice.

Diversions.—During navigation season water is diverted past the gage through the Schuylkill Navigation Company Canal, which follows along the left bank.

The following discharge measurement was made by H. J. McIntyre: No. 22, December 13: Gage height, 2.84 feet; discharge, 520 second-feet.

Daily Mean Gage Height, in feet, of Schuylkill River at Conshohocken, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.29	2.73	3.00									
2	3.49	3.15	2.92									
3	3.09	2.94										
4	3.57	3.08										
5	3.21	3.62										
6	2.70	3.68										
7	3.32	3.74										
8	3.52	3.25										
9	3.77	3.25										
10	3.74	2.92	3.17									
11	3.85	3.63	3.34									
12	3.86	3.60	3.45									
13	3.14	3.39	3.20									
14	3.13	2.95	2.80									
15	3.43	3.15	3.78									
16	3.25	2.86	3.36									
17	3.05	3.48	3.78									
18	2.95	3.36	3.12									
19	3.49	3.60	3.19									
20	3.17	3.70	3.40									
21	3.15	2.80	3.26									
22	3.18	3.41	3.39									
23	3.65	3.29	3.11									
24	3.36	3.21	3.54									
25	3.04	2.54	3.66									
26	2.86	3.25	3.57									
27	3.11	3.25	3.48									
28	3.03	2.81	2.90									
29		2.92	4.08									
30	3.64	3.23	3.20									
31	3.44											

Note.—Gage height Oct. 29 and Dec. 3-9 and 31 not observed. Station discontinued Dec. 31, 1922.

DELAWARE BASIN—STATION NO. 15

BRANDYWINE CREEK AT CHADDS FORD

Location.—At two-span steel railroad bridge, Pennsylvania Railroad, Chadds Ford, Delaware County.

Drainage Area.—285 square miles.

Records Available.—August 1, 1911, to September 30, 1923.

Gages.—Standard chain attached to upstream side of bridge; read by H. W. Guest. Elevation of gage zero 150.18 feet, United States Geological Survey datum. The Sanborn water-stage recorder, installed on the upstream end of pier and referred to chain gage datum, was not used after December 11, 1922.

Discharge Measurements.—Made from upstream side of bridge.

Channel and Control.—The right bank is low and the stream begins to overflow a flat 700 feet wide at a stage of about 6 feet. Left bank is high and not subject to overflow. Bed is composed of mud, gravel and stones. Control is at the first of a series of low riffles, where the bed is composed of gravel, extending downstream from about 150 feet below gage; shifts occasionally.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 7.0 feet at 6 a. m. April 29 (discharge, 3,520 second-feet); minimum, 0.58 foot at 6 a. m. October 6 (discharge, 75 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Regulation.—Fluctuations in stage during low water are caused by the operation of a mill above the station.

Accuracy.—State-discharge relation probably permanent. Rating curve well defined between 100 and 2,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height, computed from chain gage readings, to rating table. Results good.

Discharge measurements of Brandywine Creek at Chadds Ford, during the year ending September 30, 1923.

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.ft.
39	Dec. 13	H. J. McIntyre	0.96	124
40	Sept. 7	J. M. Snavely	.92	114
41	7	do	.91	112

Daily Mean Gage Height, in feet, of Brandywine Creek at Chadds Ford, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.80	0.82	0.81	1.89	1.47	1.65	1.36	1.53	1.31	0.98	1.09	0.98
2	.83	.83	.81	1.98	1.43	1.47	1.39	1.48	1.32	.95	.99	.92
3	.75	.81	.84	1.74	1.45	1.45	1.41	1.51	1.30	.94	1.00	.97
4	.79	.81	.81	1.69	1.40	1.44	1.55	1.49	1.65	.93	1.38	.95
5	.75	.80	.85	1.59	1.37	1.43	1.87	1.55	1.41	.92	1.34	.93
6	.76	.80	.84	1.45	1.36	1.41	3.52	1.50	1.32	.91	1.42	.95
7	.93	.81	.90	1.41	1.35	1.38	2.07	1.43	1.31	.92	1.29	.95
8	.84	.83	.91	1.85	1.29	1.37	1.78	1.38	1.35	.92	1.27	2.97
9	.83	.83	.93	1.60	1.25	1.45	1.71	1.75	1.34	.91	1.26	2.33
10	1.29	.86	.95	1.29	1.26	1.59	1.69	1.64	1.33	.90	1.21	1.07
11	1.23	.89	.88	1.27	1.27	1.59	1.65	1.60	1.32	.90	.92	1.01
12	1.07	.89	.88	1.26	1.32	1.99	1.61	1.67	1.22	.89	.88	.99
13	.81	.89	.95	1.27	4.90	2.52	1.62	1.94	1.21	.88	.95	.98
14	.86	.84	.93	1.24	3.52	4.96	1.61	1.83	1.19	.88	.99	.99
15	.84	.85	.97	1.25	2.57	4.60	2.01	1.72	1.18	.88	1.01	.98
16	.84	.88	.97	1.19	1.92	4.22	1.94	1.60	1.17	.95	.94	.98
17	.91	.88	.95	1.08	1.34	2.83	1.83	1.55	1.15	.92	.88	.97
18	.86	.87	.93	1.04	1.30	2.05	1.62	1.51	1.13	.85	.87	1.00
19	.83	.88	.94	1.03	1.27	2.24	1.61	1.41	1.12	.84	.85	1.03
20	.86	.87	.93	.96	1.26	1.83	1.51	1.43	1.10	.81	1.35	1.06
21	.85	.86	.94	1.00	1.25	1.74	1.48	2.52	1.08	.81	.92	.99
22	.86	.87	.95	2.13	1.22	1.69	1.48	1.87	1.01	.80	.88	1.01
23	.85	.89	.95	1.85	1.25	1.69	1.50	1.63	.99	.86	.91	1.19
24	.84	.88	.96	1.81	1.26	1.70	1.43	1.59	1.00	.90	.87	1.05
25	.82	.79	.95	2.72	1.30	1.68	1.42	1.58	1.06	1.02	.86	1.02
26	.83	.75	.97	2.11	1.46	1.69	1.35	1.52	1.01	.99	.90	1.01
27	.82	.87	.98	1.50	1.79	1.67	1.34	1.48	.99	.99	.88	1.01
28	.84	.84	1.02	1.42	1.77	1.67	1.52	1.49	1.01	.95	.90	.99
29	.85	.84	1.19	1.39	-------	1.53	4.52	1.46	.98	.92	4.05	.99
30	.84	.83	1.07	1.36	-------	1.45	1.83	1.45	.98	1.22	2.18	1.00
31	.86	-------	1.03	1.44	-------	1.44	-------	1.45	-------	1.19	1.15	-------

Daily discharge, in second-feet, of Brandywine Creek at Chadds Ford, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	93	96	95	420	269	329	235	296	220	128	156	128
2	98	98	95	459	257	269	244	273	223	122	131	115
3	88	95	100	364	263	263	250	279	217	119	133	126
4	92	95	95	346	247	260	296	276	329	117	241	122
5	88	93	102	312	238	257	401	296	250	115	229	117
6	89	93	100	263	235	250	1,160	279	223	112	253	122
7	117	95	110	250	232	241	480	257	220	115	214	122
8	100	98	112	401	214	238	382	241	232	115	208	915
9	98	98	117	312	202	263	346	364	229	112	205	611
10	214	103	122	214	205	312	346	329	226	110	190	151
11	196	108	107	208	208	312	329	312	223	110	115	136
12	151	108	107	205	223	459	312	329	193	108	107	131
13	95	108	122	208	1,920	680	312	440	190	107	122	129
14	103	100	117	199	1,160	1,980	312	401	184	107	131	131
15	100	102	125	202	727	1,740	459	346	181	107	136	128
16	100	107	126	184	420	1,530	440	312	179	122	119	128
17	112	107	122	154	229	821	401	296	173	115	107	126
18	103	105	128	143	217	480	312	279	167	102	105	133
19	98	107	119	141	208	565	312	250	165	100	102	141
20	103	105	117	124	205	401	279	257	159	95	232	149
21	102	103	119	133	202	364	273	680	154	95	115	131
22	103	105	122	521	193	346	273	401	136	93	107	136
23	102	108	122	401	202	346	279	329	131	103	112	184
24	100	107	124	382	205	346	257	312	133	110	105	146
25	96	92	122	774	217	346	253	312	149	138	103	138
26	98	88	126	500	266	346	232	279	136	131	110	136
27	96	105	128	279	382	329	229	273	131	131	107	136
28	100	100	133	253	364	329	279	276	136	122	110	131
29	102	100	184	244	-------	296	1,690	266	128	115	1,420	131
30	100	98	151	235	-------	263	401	263	128	193	542	133
31	103	-------	141	260	-------	260	-------	263	-------	184	173	-------

Monthly discharge of Brandywine Creek at Chadds Ford, for the year ending September 30, 1923.
(Drainage area 285 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	214	88	108	0.379	0.44
November	108	88	101	.354	.40
December	184	95	120	.421	.49
January	774	124	293	1.03	1.19
February	1,920	193	354	1.24	1.29
March	1,980	238	491	1.72	1.98
April	1,690	229	392	1.38	1.54
May	680	241	315	1.11	1.28
June	329	128	185	.649	.72
July	193	93	118	.414	.48
August	1,420	102	201	.705	.81
September	915	115	175	.614	.68
The Year	1,980	88	237	.832	11.30

SUSQUEHANNA BASIN

NORTH BRANCH SUSQUEHANNA RIVER AT BINGHAMTON, N. Y.

Location.—At four-span steel highway bridge, Washington Street, Binghamton, Broome County.

Drainage Area.—2,400 square miles.

Records Available.—July 31, 1901, to December 31, 1912, and January 23, 1915, to September 30, 1923.

Gage.—Standard chain attached to upstream side of bridge; read to half-tenths twice daily by A. L. Coleman; during high stages more frequently. Elevation of gage zero 821.49 feet, United States Geological Survey datum.

Discharge Measurements.—Owing to the stage-discharge relation being affected by backwater from the Chenango River, measurements were discontinued in 1912.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of fine and coarse gravel.

Extremes of Stage.—Maximum gage height during the year, estimated from hydrograph, 13.6 feet at 2 p. m. March 24; minimum, 1.65 feet from 8 a. m. September 21 to 5 p. m. September 24.

Ice.—Stage-discharge relation usually affected by ice.

Gage heights obtained at this station are for Flood Warning purposes.

Daily Mean Gage Height, in feet, of North Branch Susquehanna River at Binghamton, N. Y., for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.10	2.20	2.30	3.75	2.95	3.05	4.15	4.70	2.50	2.10	2.03	2.17
2	2.08	2.20	2.30	6.12	3.20	2.60	3.95	4.25	2.47	2.05	2.15	2.15
3	2.10	2.15	2.73	6.00	3.53	2.80	3.85	3.80	2.35	2.15	2.15	2.05
4	2.10	2.10	2.82	4.97	3.95	3.85	4.67	3.55	2.30	2.15	2.10	1.95
5	2.10	2.10	2.70	4.25	4.45	6.60	8.27	3.35	2.40	2.15	2.10	2.05
6	2.10	2.15	2.60	3.90	4.45	6.80	12.20	3.25	2.55	2.25	2.07	2.23
7	2.10	2.25	2.60	3.50	3.65	5.85	11.70	3.07	2.55	2.10	2.07	2.17
8	2.10	2.20	2.60	3.15	3.65	5.05	9.80	2.97	2.83	2.05	2.05	2.15
9	2.10	2.22	2.60	3.00	3.23	4.57	8.25	4.05	3.78	2.05	2.07	2.35
10	2.12	2.30	3.01	3.32	3.15	4.27	6.80	6.17	3.65	2.05	1.97	2.45
11	2.12	2.30	3.18	3.30	3.45	4.05	5.95	5.25	3.43	2.07	1.90	2.40
12	2.10	2.30	2.70	3.00	3.50	3.65	5.45	4.92	3.10	1.95	1.90	2.27
13	2.40	2.30	2.70	2.72	2.95	4.30	5.13	5.70	2.95	1.95	1.85	2.25
14	2.40	2.30	2.72	3.00	3.07	4.45	4.77	5.15	2.85	1.85	1.80	2.15
15	2.30	2.30	2.48	3.05	3.55	4.50	4.35	4.45	2.77	1.90	1.80	2.15
16	2.22	2.30	2.55	2.95	3.25	5.03	4.00	4.62	2.75	1.90	1.70	2.15
17	2.18	2.30	2.50	2.95	3.65	8.63	3.83	5.47	2.65	1.95	1.75	2.15
18	2.10	2.30	2.42	3.30	3.45	9.80	3.67	4.93	2.55	1.95	1.80	2.03
19	2.10	2.35	2.59	3.05	3.40	10.15	3.57	4.23	2.55	1.90	1.75	1.95
20	2.10	2.40	2.74	2.95	3.55	8.40	3.43	3.85	2.80	1.85	1.75	2.00
21	2.10	2.35	2.40	3.45	3.20	6.85	3.33	3.73	2.27	1.85	1.65	2.15
22	2.10	2.30	2.30	3.73	3.10	8.08	3.25	3.70	2.15	1.85	1.65	2.40
23	2.10	2.30	2.30	4.53	3.00	10.33	3.17	3.47	2.15	1.85	1.65	2.75
24	2.12	2.30	2.40	4.45	2.85	13.22	3.05	3.33	2.15	1.80	1.65	3.05
25	2.20	2.30	2.40	3.95	2.55	12.10	2.90	3.15	2.10	1.85	1.75	2.97
26	2.30	2.30	2.42	4.15	3.15	9.30	2.90	3.00	2.05	1.85	1.75	2.87
27	2.30	2.30	2.40	3.73	2.65	7.45	2.83	2.90	2.10	1.80	1.83	2.57
28	2.35	2.30	2.40	3.55	2.75	6.30	2.83	2.77	2.15	1.80	1.80	2.50
29	2.35	2.28	2.40	3.45	-------	5.20	4.35	2.63	2.15	1.95	2.10	2.55
30	2.35	2.25	3.00	3.35	-------	4.55	5.30	2.65	2.15	1.87	2.13	2.53
31	2.25	-------	3.00	3.45	-------	4.60	-------	2.55	-------	2.00	2.17	-------

Note.—Stage-discharge relation Dec. 19 to Jan. 4 and Jan. 17 to Mar. 17 affected by ice.

CHEMUNG RIVER AT CORNING, N. Y.

Location.—At four-span steel highway bridge, Bridge Street, Corning, Steuben County.

Drainage Area.—1,940 square miles.

Records Available.—December 1, 1909, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read to tenths once daily by C. H. Voorhees, Jr.; during high stages more frequently. Elevation of gage zero 912.82 feet, United States Geological Survey datum.

Channel and Control.—River is confined by dykes on both sides which overflow at gage height 23.6 feet. Bed is composed of gravel.

Extremes of Stage.—Maximum gage height during the year, estimated from hydrograph, 13.5 feet at 6 p. m. March 4; minimum, 1.9 feet on September 1.

Ice.—Stage-discharge relation usually affected by ice.

Gage heights obtained at this station are for Flood Warning purposes.

Daily Mean Gage Height, in feet, of Chemung River at Corning, N. Y., for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.3	2.2	2.3	3.4	3.1	3.5	3.6	3.5	2.8	2.3	2.3	1.9
2	2.3	2.2	2.3	4.4	3.2	3.6	3.5	3.5	2.7	2.4	2.3	-------
3	2.3	2.3	2.3	3.9	3.8	5.4	3.5	3.4	2.7	2.4	2.3	-------
4	2.3	2.3	2.2	3.5	4.0	11.8	3.9	3.4	2.7	2.9	2.5	2.0
5	2.3	2.3	2.2	3.3	4.5	10.8	8.9	3.3	2.7	2.9	2.4	2.0
6	2.3	2.3	2.3	3.3	4.1	7.1	9.3	3.1	2.7	2.9	2.3	2.0
7	2.3	2.4	2.7	3.3	3.9	5.6	6.4	3.0	2.7	2.5	2.3	2.0
8	2.3	2.4	2.5	3.3	3.7	5.0	5.7	3.0	3.3	2.6	2.2	2.0
9	2.3	2.4	2.5	3.3	3.6	4.6	5.6	3.1	3.7	2.4	2.2	2.0
10	2.3	2.4	2.4	3.3	3.6	4.6	4.8	3.6	3.4	2.4	2.2	2.1
11	2.5	2.4	2.7	3.3	3.5	4.6	4.6	3.5	3.0	2.2	2.2	2.1
12	2.7	2.3	2.5	3.2	3.3	6.6	4.6	3.9	2.9	2.1	2.2	2.0
13	2.6	2.3	2.5	3.2	3.3	7.9	4.2	5.5	2.8	2.3	2.2	2.0
14	2.5	2.3	2.5	3.2	3.2	6.0	4.0	4.7	2.6	2.2	2.2	2.0
15	2.4	2.3	2.5	3.3	3.2	5.1	4.0	4.2	2.7	2.1	2.2	2.1
16	2.4	2.3	2.4	3.1	3.5	5.8	3.8	4.6	2.6	2.1	2.2	2.1
17	2.3	2.3	2.4	3.1	3.5	8.2	3.6	5.7	2.5	2.0	2.1	2.0
18	2.3	2.2	2.5	3.1	3.5	6.4	3.6	4.7	2.5	2.3	2.1	2.0
19	2.3	2.2	2.5	3.0	3.4	6.6	3.6	4.4	2.4	2.3	2.1	2.0
20	2.2	2.2	2.6	3.0	3.4	5.2	3.5	4.2	2.4	2.3	2.1	2.0
21	2.2	2.2	2.6	2.9	3.4	5.1	3.4	4.3	2.4	2.3	2.1	2.0
22	2.2	2.3	2.6	3.0	3.4	5.5	3.4	4.7	2.4	2.3	2.1	2.1
23	2.2	2.3	2.6	4.1	3.4	6.8	3.4	4.4	2.3	2.3	2.1	2.1
24	2.3	2.3	2.6	3.9	3.3	7.3	3.4	4.0	2.3	2.3	2.1	2.0
25	2.4	2.3	2.6	3.7	3.2	6.5	3.4	3.6	2.2	2.3	2.1	2.0
26	2.4	2.3	2.6	3.6	3.1	5.3	3.2	3.5	2.2	2.2	2.0	2.0
27	2.4	2.3	2.6	3.5	3.0	4.9	3.2	3.3	2.3	2.2	2.0	2.1
28	2.4	2.2	2.7	3.5	3.2	4.5	3.1	3.2	2.4	2.3	2.0	2.2
29	2.4	2.2	3.4	3.3	-------	3.9	4.1	3.0	2.4	2.3	2.0	2.2
30	2.3	2.2	3.2	3.3	-------	3.6	3.7	2.9	2.3	2.3	2.0	2.3
31	2.3	-------	3.1	3.3	-------	3.7	-------	2.8	-------	2.3	2.0	-------

Note.—Stage-discharge relation Dec. 14 to Jan. 2 and Jan. 16 to Mar. 3 affected by ice. Gage height not observed on Sept. 2 and 3.

SUSQUEHANNA BASIN—STATION NO. 3

NORTH BRANCH SUSQUEHANNA RIVER AT TOWANDA,

Location.—At four-span steel highway bridge, Bridge Street, Towanda, Bradford County.

Drainage Area.—7,770 square miles.

Records Available.—December 1, 1892, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by Hiram E. Bull. Elevation of gage zero 693.4 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and rock. Control is at a riffle extending downstream from right end of bridge to island and from left side of island to left bank; changed during heavy ice flow of March 1920.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 13.4 feet at 8 p. m. March 4 (discharge, 81,200 second-feet); minimum, 0.42 foot from 8 a. m. August 27 to 8 a. m. August 28 (discharge, 660 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined between 800 and 20,000 second-feet and well defined from 20,000 to 167,000 second-feet. Gage read twice daily to half tenths; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

The following discharge measurement was made by H. J. McIntyre: No. 31, August 16; Gage height, 0.58 foot discharge, 854 second-feet.

Daily Mean Gage Height, in feet, of North Branch Susquehanna River at Towanda, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.10	1.15	1.20	3.80	4.75	2.92	3.65	4.00	1.78	1.05	0.81	0.78
2	1.09	1.10	1.31	6.10	4.70	3.10	3.48	3.55	1.68	1.05	.84	.80
3	1.06	1.15	1.50	5.95	4.85	3.55	3.25	3.20	1.65	1.00	.95	.80
4	1.08	1.10	1.91	4.95	5.30	9.27	3.40	2.85	1.60	1.02	.98	.72
5	1.06	1.10	2.00	4.05	5.75	11.55	5.65	2.68	1.60	1.10	.90	.72
6	1.00	1.10	1.85	3.50	5.05	8.11	11.55	2.55	1.70	1.28	.90	.78
7	1.00	1.15	1.68	2.95	4.70	6.15	11.14	2.38	1.95	1.18	.85	.79
8	1.00	1.20	1.64	2.70	4.65	5.32	9.00	2.29	2.38	1.08	.85	.88
9	1.04	1.20	1.82	2.35	4.65	4.65	7.52	2.60	2.78	.98	.80	.80
10	1.15	1.25	2.30	2.60	4.45	4.18	6.40	4.59	3.05	.95	.74	.84
11	1.35	1.40	2.00	2.60	4.10	3.95	5.45	4.62	2.85	.92	.69	.98
12	1.50	1.41	1.96	2.60	4.00	4.42	4.90	4.15	2.55	.88	.65	1.10
13	1.60	1.32	1.55	2.60	3.95	6.20	4.55	5.28	2.25	.80	.64	1.00
14	1.50	1.30	2.30	4.38	3.90	5.70	4.25	5.10	2.05	.80	.58	.90
15	1.44	1.30	3.25	6.30	3.38	4.70	3.90	4.20	1.95	.80	.55	.85
16	1.32	1.25	3.05	6.95	3.38	5.14	3.55	3.82	1.82	.75	.58	.80
17	1.28	1.32	3.00	6.60	3.20	9.98	3.35	5.55	1.78	.78	.56	.80
18	1.20	1.40	3.00	6.20	3.30	9.48	3.20	5.35	1.68	.85	.51	.78
19	1.15	1.46	3.00	6.55	3.30	9.57	3.05	4.35	1.58	.85	.50	.72
20	1.10	1.41	2.95	6.30	3.25	8.42	2.98	3.75	1.48	.80	.50	.70
21	1.10	1.40	2.80	6.50	3.15	6.82	2.88	3.65	1.35	.75	.50	.72
22	1.10	1.36	2.80	6.95	3.10	6.76	2.68	4.00	1.24	.72	.50	.71
23	1.05	1.32	2.80	7.20	2.98	8.31	2.62	3.52	1.18	.66	.48	.92
24	1.05	1.30	3.00	7.15	2.90	11.22	2.65	3.15	1.10	.62	.46	1.45
25	1.08	1.29	2.95	6.80	2.88	10.67	2.60	2.85	1.08	.65	.45	1.71
26	1.28	1.25	2.80	6.20	2.78	8.91	2.42	2.65	1.05	.60	.43	1.60
27	1.40	1.25	2.90	6.05	2.80	7.17	2.28	2.45	1.05	.68	.42	1.55
28	1.38	1.24	2.75	5.70	2.82	5.82	2.19	2.28	1.02	.70	.46	1.32
29	1.28	1.20	3.05	5.40	-------	4.77	2.55	2.15	1.05	.70	.55	1.25
30	1.25	1.20	3.32	5.10	-------	4.20	3.72	2.02	1.05	.70	.60	1.32
31	1.20	-------	3.35	4.60	-------	3.98	-------	1.88	-------	.75	.75	-------

Note.—Stage-discharge relation Dec. 12 to Jan. 4 and Jan. 10 to Mar. 3 affected by ice.

Daily discharge, in second-feet, of North Branch Susquehanna River at Towanda, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,570	1,660	1,740	8,000	5,000	3,200	11,200	13,500	3,140	1,490	1,120	1,120
2	1,570	1,570	1,930	22,000	6,500	4,200	10,600	11,200	2,860	1,490	1,190	1,120
3	1,490	1,660	2,360	20,000	7,000	8,000	9,050	9,050	2,730	1,410	1,340	1,120
4	1,570	1,570	3,440	17,000	8,000	48,200	10,100	6,970	2,600	1,410	1,410	990
5	1,490	1,570	3,750	13,500	10,000	66,000	23,300	6,470	2,600	1,570	1,260	990
6	1,410	1,570	3,290	10,600	9,000	39,600	66,000	6,000	2,860	1,930	1,260	1,120
7	1,410	1,660	2,860	8,010	7,000	27,000	62,000	5,150	3,600	1,740	1,190	1,120
8	1,410	1,740	2,730	6,470	6,500	21,300	46,000	4,770	5,150	1,570	1,190	1,260
9	1,490	1,740	3,140	4,960	7,000	17,100	35,400	6,000	6,970	1,410	1,120	1,120
10	1,660	1,840	4,770	4,800	6,500	14,700	28,300	17,100	8,010	1,340	1,060	1,190
11	2,040	2,140	3,750	5,500	5,500	13,500	22,000	17,100	6,970	1,260	990	1,410
12	2,360	2,140	2,600	4,800	5,000	15,900	18,900	14,700	6,000	1,260	930	1,570
13	2,600	1,930	2,200	3,800	5,500	27,000	17,100	21,300	4,590	1,120	930	1,410
14	2,360	1,930	1,700	3,200	6,000	23,900	14,700	20,100	3,910	1,120	870	1,260
15	2,250	1,930	1,500	2,800	5,500	17,700	12,900	14,700	3,600	1,120	815	1,190
16	1,930	1,840	1,300	3,200	4,600	20,100	11,200	12,300	3,140	1,060	870	1,120
17	1,930	1,930	1,300	2,800	4,800	53,500	10,100	23,300	3,140	1,120	815	1,120
18	1,740	2,140	1,300	2,600	4,000	49,700	9,050	22,000	2,860	1,190	760	1,120
19	1,660	2,250	1,200	3,000	3,200	50,500	8,010	15,900	2,600	1,190	760	990
20	1,570	2,140	1,200	4,000	3,200	41,700	8,010	12,300	2,360	1,120	760	990
21	1,570	2,140	1,200	5,500	3,400	30,800	7,490	11,200	2,040	1,060	760	990
22	1,570	2,040	1,300	7,500	3,400	30,800	6,470	13,500	1,840	990	760	990
23	1,490	1,930	1,300	9,000	3,200	41,000	6,000	10,600	1,740	930	760	1,260
24	1,490	1,930	1,300	11,000	3,000	62,800	6,000	9,050	1,570	870	710	2,250
25	1,570	1,930	1,300	11,000	2,800	58,900	6,000	6,970	1,570	930	710	2,860
26	1,930	1,840	1,400	10,000	3,000	45,300	5,150	6,000	1,490	870	710	2,600
27	2,140	1,840	1,500	8,000	3,200	33,500	4,770	5,360	1,490	990	660	2,480
28	2,140	1,840	1,700	6,000	2,800	24,500	4,410	4,770	1,410	990	710	1,930
29	1,930	1,740	1,900	5,000	-------	18,300	6,000	4,240	1,490	990	815	1,840
30	1,840	1,740	2,200	4,800	-------	14,700	11,800	3,750	1,490	990	870	1,930
31	1,740	-------	3,200	4,800	-------	13,500	-------	3,440	-------	1,060	1,060	-------

Note.—Discharge Dec. 12 to Jan. 4 and Jan. 10 to Mar. 3 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for North Branch Susquehanna River at Wilkes-Barre and Danville.

Monthly discharge of North Branch Susquehanna River at Towanda, for the year ending September 30, 1923.
(Drainage area 7,770 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	2,600	1,410	1,770	0.228	0.26
November	2,250	1,570	1,860	.239	.27
December	4,770	1,200	2,140	.275	.32
January	22,000	2,600	7,540	.970	1.12
February	10,000	2,800	5,160	.664	.69
March	66,000	3,200	30,200	3.89	4.48
April	66,000	4,410	16,600	2.14	2.39
May	23,300	3,440	10,900	1.40	1.61
June	8,010	1,410	3,190	.411	.46
July	1,930	870	1,210	.156	.18
August	1,410	660	941	.121	.14
September	2,860	990	1,420	.183	.20
The Year	66,000	660	6,940	.893	12.12

SUSQUEHANNA BASIN—STATION NO. 4

TOWANDA CREEK NEAR MONROETON

Location.—At single-span steel highway bridge about one and a half miles southwest of Monroeton, Bradford County.

Drainage Area.—218 square miles.

Records Available.—January 30, 1914, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by Leon D. Pepper.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Neither bank is subject to overflow. Bed is composed of coarse gravel. Control consists of the foundation timbers of an old wooden dam and a gravel bar which probably shifts.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 5.0 feet at noon March 16 (discharge, about 3,380 second-feet); minimum, 1.64 feet from 5. p. m. August 25 to 5 p. m. August 26 and at 5 p. m. August 27 (discharge, 10 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year. Rating curve well defined between 10 and 500 second-feet and fairly well defined from 500 to 2,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for high stages when they are fair.

The following discharge measurement was made by J. M. Snavely: No. 28, August 15: Gage height, 1.68 feet; discharge, 5.33 second-feet. Measurement made by wading 500 feet below gage.

Daily Mean Gage Height, in feet, of Towanda Creek near Monroeton, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.81	1.86	1.87	3.05	2.47	2.57	2.64	2.56	2.16	1.96	1.83	1.74
2	1.80	1.87	1.85	3.04	2.47	2.51	2.54	2.47	2.11	1.91	1.81	1.72
3	1.80	1.88	1.85	2.71	2.57	3.86	2.48	2.39	2.09	1.90	1.77	1.70
4	1.78	1.90	1.86	2.57	2.61	4.33	2.63	2.37	2.13	1.90	1.77	1.68
5	1.76	1.86	1.88	2.43	2.55	4.24	3.41	2.35	2.10	1.88	1.79	1.69
6	1.76	1.88	2.00	2.33	2.47	3.48	3.72	2.33	2.08	1.86	1.79	1.74
7	1.78	1.88	1.89	2.26	2.51	3.36	3.22	2.20	2.64	1.85	1.78	1.74
8	1.80	1.90	1.93	2.41	2.52	3.11	3.03	2.28	3.06	1.83	1.77	1.76
9	1.84	1.94	1.97	2.37	2.45	2.99	2.87	2.81	2.70	1.80	1.74	1.86
10	1.96	1.91	1.86	2.32	2.42	2.82	2.76	2.76	2.47	1.82	1.72	1.86
11	2.06	1.88	1.90	2.41	2.37	2.84	2.64	2.63	2.34	1.84	1.67	1.80
12	2.02	1.84	1.95	2.21	2.37	3.38	2.57	2.93	2.26	1.80	1.69	1.76
13	1.94	1.92	2.02	2.27	2.34	3.44	2.55	3.53	2.20	1.78	1.71	1.75
14	1.90	1.87	1.90	2.26	2.40	3.22	2.51	3.12	2.14	1.78	1.69	1.74
15	1.90	1.86	1.92	2.25	2.67	2.96	2.47	2.95	2.18	1.76	1.69	1.71
16	1.88	1.90	1.88	2.25	2.62	4.24	2.44	3.39	2.14	1.74	1.69	1.70
17	1.90	1.88	1.90	2.19	2.46	4.06	2.39	3.38	2.07	1.74	1.69	1.70
18	1.90	1.87	1.90	2.21	2.48	3.59	2.36	3.24	2.02	1.73	1.68	1.69
19	1.82	1.86	1.85	2.23	2.56	3.59	2.35	2.99	2.00	1.72	1.68	1.70
20	1.87	1.90	1.87	2.19	2.59	3.19	2.31	2.84	2.00	1.70	1.67	1.70
21	1.88	1.87	1.87	2.41	2.57	3.03	2.29	2.96	1.94	1.67	1.66	1.79
22	1.86	1.89	1.90	2.75	2.57	3.26	2.27	2.87	1.92	1.67	1.68	1.81
23	1.88	1.88	1.89	2.66	2.55	3.80	2.25	2.71	1.92	1.67	1.66	1.84
24	1.90	1.90	1.89	2.57	2.54	3.82	2.22	2.61	1.90	1.67	1.66	1.82
25	1.92	1.87	1.89	2.51	2.53	3.31	2.19	2.55	1.90	1.68	1.64	1.78
26	1.90	1.86	1.93	2.42	2.54	3.16	2.16	2.47	1.92	1.67	1.64	1.75
27	1.92	1.87	1.89	2.37	2.62	2.96	2.15	2.41	2.03	1.67	1.64	1.74
28	1.86	1.86	1.95	2.23	2.62	2.88	2.17	2.32	2.00	1.79	1.67	1.74
29	1.86	1.86	2.09	2.38	-------	2.83	2.67	2.30	2.02	1.83	1.87	1.78
30	1.90	1.86	2.08	2.39	-------	2.68	2.55	2.24	1.98	1.82	1.80	1.78
31	1.88	-------	2.07	2.45	-------	2.68	-------	2.18	-------	1.82	1.76	-------

Daily discharge, in second-feet, of Towanda Creek near Monroeton, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13	15	15	430	118	155	186	151	43	18	14	12
2	13	15	14	423	118	132	144	118	34	16	13	11
3	13	15	14	220	155	1,220	121	92	31	16	12	11
4	13	16	15	155	172	2,000	181	88	37	16	12	11
5	12	15	15	105	148	1,820	730	82	32	15	13	11
6	12	15	20	78	118	804	1,040	78	30	15	13	12
7	13	15	16	62	132	682	557	68	186	14	13	12
8	13	16	17	98	136	472	416	66	437	14	12	12
9	14	18	19	88	112	388	312	276	215	13	12	15
10	18	16	15	75	102	282	248	248	118	14	11	15
11	27	15	16	98	88	294	186	181	80	14	10	13
12	22	14	18	52	88	701	155	350	62	13	11	12
13	18	17	22	64	89	762	148	877	50	13	11	12
14	16	15	16	62	95	557	132	480	39	13	11	12
15	16	15	17	60	201	369	118	362	46	12	11	11
16	15	16	15	60	177	1,820	108	710	39	12	11	11
17	16	15	16	48	115	1,500	92	701	28	12	11	11
18	16	15	16	52	121	930	85	574	22	12	11	11
19	14	15	14	56	151	930	82	388	20	11	11	11
20	15	16	15	48	163	532	72	294	20	11	10	11
21	15	15	15	98	155	416	68	369	18	10	10	13
22	15	16	16	242	155	591	64	312	17	10	11	13
23	15	15	16	196	148	1,160	60	220	17	10	10	14
24	16	16	16	155	144	1,160	54	172	16	10	10	14
25	17	15	16	132	140	634	48	148	16	11	10	13
26	16	15	17	102	144	510	43	118	17	10	10	12
27	17	15	16	88	177	369	41	98	24	10	10	12
28	15	15	18	56	177	318	45	75	20	13	10	12
29	15	15	31	90	-------	288	201	70	22	14	15	13
30	16	15	30	92	-------	205	148	58	19	14	13	13
31	15	-------	28	112	-------	205	-------	46	-------	14	12	-------

Monthly discharge of Towanda Creek near Monroeton, for the year ending September 30, 1923.
(Drainage area 218 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	27	12	15.5	0.071	0.08
November	18	14	15.4	.071	.08
December	31	14	17.5	.080	.09
January	430	48	119	.546	.63
February	201	80	137	.628	.65
March	2,000	132	716	3.28	3.78
April	1,040	41	196	.899	1.00
May	877	46	254	1.17	1.35
June	437	16	58.5	.268	.30
July	18	10	12.9	.059	.07
August	15	10	11.4	.052	.06
September	15	11	12.2	.056	.06
The Year	2,000	10	131	.601	8.15

SUSQUEHANNA BASIN—STATION NO. 5

TUNKHANNOCK CREEK AT DIXON

Location.—At single-span steel highway bridge, about two miles east of Tunkhannock, at Dixon, Wyoming County.

Drainage Area.—393 square miles.

Records Available.—January 28, 1914, to September 30, 1923.

Gage.—Standard chain attached to upstream side of bridge; read by N. L. Kneller.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—The right bank is high, steep, and does not overflow; the left is low but not subject to overflow. Bed is composed of coarse gravel. Control is at a riffle, where the bed is composed of boulders, about 300 feet below gage; permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 7.5 feet at 8 p. m. March 16 (discharge, about 6,450 second-feet); minimum 0.90 foot at 5 p. m. October 5 and 6, 8 a. m. November 25 and 5 p. m. July 23 (discharge, 27 second-feet.

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 30 and 4,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of Tunkhannock Creek at Dixon, during the year ending September 30, 1923.

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.ft.
29	Oct. 4a	H. J. McIntyre	0.97	29.6
30	4a	do	.97	29.4
31	Aug. 16b	do	1.26	56.4
32	16b	do	1,26	54.8

a Measurement made by wading 300 feet above gage.
b Measurement made by wading 700 feet above gage.

Daily Mean Gage Height, in feet, of Tunkhannock Creek at Dixon, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.05	1.04	1.12	2.71	2.12	2.02	2.10	2.56	1.69	1.31	1.65	1.52
2	.98	1.10	1.26	3.08	2.11	1.98	2.15	2.38	1.70	1.26	1.58	1.41
3	1.00	1.12	1.18	2.55	2.30	2.34	2.20	2.22	1.68	1.29	1.48	1.38
4	1.01	1.18	1.21	2.35	2.60	4.28	2.25	2.15	1.69	1.30	2.18	1.42
5	.98	1.18	1.28	2.11	2.48	5.55	2.92	2.10	1.70	1.38	1.70	1.56
6	.95	1.11	1.22	2.09	2.30	4.17	4.68	2.05	1.65	1.32	1.58	1.48
7	1.02	1.20	1.35	1.98	2.20	3.44	3.40	2.00	1.72	1.28	1.42	1.44
8	1.02	1.25	1.28	1.94	2.08	3.15	3.20	1.98	1.91	1.24	1.38	1.58
9	1.15	1.25	1.42	1.92	2.05	3.00	2.75	4.49	1.85	1.16	1.25	2.58
10	1.56	1.16	1.48	1.88	2.05	2.95	2.42	3.92	1.68	1.20	1.26	2.10
11	1.74	1.12	1.50	1.84	2.08	2.85	2.35	3.42	1.60	1.21	1.22	1.92
12	1.55	1.17	1.45	1.74	2.10	3.08	2.30	4.15	1.48	1.12	1.22	1.81
13	1.36	1.11	1.50	1.64	2.00	3.90	2.25	4.80	1.38	1.11	1.20	1.71
14	1.32	1.20	1.38	1.62	2.00	3.25	2.20	3.78	1.35	1.08	1.28	1.64
15	1.29	1.11	1.32	1.58	2.00	3.15	2.14	3.45	1.38	1.15	1.29	1.52
16	1.24	1.08	1.32	1.72	2.05	5.39	2.12	3.50	1.45	1.10	1.27	1.49
17	1.31	1.16	1.28	1.75	2.10	5.75	2.08	3.45	1.32	1.12	1.29	1.44
18	1.35	1.12	1.18	1.72	1.98	4.50	2.06	2.88	1.35	1.05	1.26	1.42
19	1.36	1.08	1.35	1.70	1.95	4.70	2.08	2.65	1.24	1.02	1.19	1.40
20	1.28	1.02	1.32	1.68	2.00	4.12	2.08	2.48	1.24	1.02	1.24	1.40
21	1.25	1.08	1.36	1.78	1.95	3.39	2.10	2.62	1.19	1.02	1.22	1.75
22	1.20	1.08	1.39	3.13	1.90	3.38	1.85	2.52	1.15	1.00	1.22	1.88
23	1.21	.98	1.35	2.82	1.90	4.26	1.90	2.30	1.12	.92	1.22	1.72
24	1.12	1.02	1.35	2.62	1.85	5.09	1.85	2.15	1.12	1.00	1.21	2.00
25	1.14	.92	1.21	2.82	1.85	4.13	1.78	2.05	1.10	.98	1.18	1.82
26	1.15	.99	1.19	2.79	1.85	3.42	1.75	2.00	1.12	.98	1.14	1.72
27	1.14	.96	1.32	2.45	1.92	2.90	1.70	2.05	1.15	1.02	1.11	1.66
28	1.10	1.02	1.28	2.31	1.95	2.60	1.89	1.95	1.24	1.58	1.34	1.58
29	1.10	1.08	1.48	2.29	-------	2.45	4.28	1.85	1.26	2.30	2.40	2.10
30	1.02	1.05	1.45	2.12	-------	2.35	3.08	1.82	1.31	1.82	1.88	1.85
31	1.08	-------	1.39	2.09	-------	2.38	-------	1.74	-------	1.68	1.69	-------

Note.—Stage-discharge relation Dec. 9-15, 20-24 and 27-21 affected by ice.

Daily discharge, in second-feet, of Tunkhannock Creek at Dixon, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	36	35	41	630	295	250	295	540	132	60	122	94
2	31	39	55	910	295	242	320	450	135	55	106	75
3	32	41	46	540	395	422	345	345	130	58	87	70
4	33	46	49	422	570	2,010	370	320	132	59	345	76
5	31	46	57	295	510	3,570	770	295	135	70	135	102
6	30	40	50	295	395	1,900	2,450	272	122	62	106	87
7	33	48	66	242	345	1,190	1,150	250	142	57	76	80
8	33	54	57	225	295	950	999	242	212	52	70	106
9	44	54	50	216	272	840	665	2,230	188	44	54	570
10	100	44	48	200	272	865	450	1,600	130	48	55	295
11	149	41	48	185	295	735	422	1,150	110	49	50	216
12	100	45	48	149	295	910	395	1,900	87	41	50	173
13	67	40	50	120	250	1,600	370	2,500	70	40	48	138
14	62	48	50	115	250	1,030	345	1,500	66	38	57	120
15	58	40	55	106	250	950	320	1,190	70	44	58	94
16	52	38	62	142	272	3,300	295	1,230	82	39	56	88
17	60	44	57	152	295	3,850	295	1,190	62	41	58	80
18	66	41	46	142	242	2,230	272	770	66	36	55	76
19	67	38	66	135	229	2,450	295	600	52	33	47	73
20	57	33	60	130	250	1,800	295	510	52	33	52	73
21	54	38	50	162	229	1,150	295	570	47	33	50	152
22	48	38	48	950	208	1,150	188	510	44	32	50	200
23	49	31	48	700	208	2,010	208	395	41	28	50	142
24	41	33	46	570	188	2,920	188	320	41	32	49	250
25	43	28	49	700	188	1,800	162	272	39	31	46	177
26	44	32	47	700	188	1,150	152	250	41	31	43	142
27	43	30	48	480	216	770	135	272	44	33	40	125
28	39	33	44	395	229	570	204	229	52	106	65	106
29	39	38	55	395	-------	480	2,010	188	55	395	450	295
30	33	36	55	295	-------	422	910	177	60	177	200	188
31	38	-------	50	295	-------	450	-------	149	-------	130	132	-------

NOTE.—Discharge Dec. 9-15, 20-24 and 27-31 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Lackawanna River at Moosic.

Monthly discharge of Tunkhannock Creek at Dixon, for the year ending September 30, 1923.
(Drainage area 393 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	149	30	52.0	0.132	0.15
November	54	28	39.7	.101	.11
December	66	41	51.6	.131	.15
January	950	106	355	.903	1.04
February	570	188	283	.720	.75
March	3,850	242	1,420	3.61	4.16
April	2,450	135	519	1.32	1.47
May	2,560	149	725	1.84	2.12
June	212	39	88.0	.224	.25
July	395	28	64.1	.163	.19
August	450	40	92.3	.235	.27
September	570	70	149	.379	.42
The Year	3,850	28	321	.817	11.08

SUSQUEHANNA BASIN—STATION NO. 6

LACKAWANNA RIVER AT MOOSIC

Location.—At single-span steel highway bridge, River Street or Moosic Road, Moosic, Lackawanna County.

Drainage Area.—265 square miles.

Records Available.—August 8, 1913, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by Nelson B. Ross and Mrs. Margaret Ross.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of culm and rocks. Control for low stages is at a slight riffle about 50 feet below gage; for medium and high stages at a pronounced riffle about 1,000 feet downstream; occasionally shifting.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 4.8 feet at 8 p. m. March 23 (discharge, 2,460 second-feet); minimum, 1.74 feet at 5 p. m. July 27 and August 26 (discharge, 68 second-feet).

Ice.—Stage-discharge relation rarely affected by ice.

Accuracy.—Stage-discharge relation probably permanent. Rating curve fairly well defined between 100 and 4,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

The following discharge measurement was made by J. M. Snavely; No. 39, August 14: Gage height, 1.83 feet; discharge, 144 second-feet.

Daily Mean Gage Height, in feet, of Lackawanna River at Moosic, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.85	1.89	1.86	3.13	2.37	2.24	2.69	3.23	2.15	1.92	2.00	1.96
2	1.87	1.99	1.88	3.01	2.38	2.24	2.60	2.93	2.19	1.98	1.91	1.93
3	1.93	1.95	1.84	2.72	2.50	3.20	2.63	2.77	2.30	2.00	1.90	1.89
4	1.87	1.94	1.91	2.54	2.30	4.15	2.80	2.65	2.73	1.88	2.05	1.94
5	1.88	1.87	1.92	2.46	2.36	4.38	3.20	2.54	2.27	1.94	1.97	1.93
6	1.87	1.95	1.92	2.41	2.35	3.85	3.84	2.45	2.58	1.96	1.95	1.94
7	1.88	1.94	1.86	2.28	2.27	3.50	3.45	2.42	2.40	1.94	1.90	1.90
8	2.15	1.94	2.05	2.27	2.27	3.27	3.19	2.39	2.57	1.84	1.85	2.26
9	1.99	1.96	2.00	2.25	2.29	3.11	2.89	3.94	2.41	1.92	1.86	2.43
10	2.44	1.93	1.96	2.21	2.30	2.96	2.81	3.82	2.24	1.93	1.82	2.24
11	2.11	1.85	1.89	2.17	2.25	2.90	2.76	3.39	2.18	1.89	1.83	2.16
12	2.05	1.83	1.88	2.17	2.27	3.06	2.77	3.72	2.17	1.89	1.82	2.09
13	1.96	1.91	1.90	2.18	2.37	3.23	2.65	4.04	2.16	1.78	1.86	2.06
14	1.92	1.90	1.90	2.20	2.20	3.22	2.54	3.69	2.14	1.87	1.82	1.99
15	1.84	1.92	1.97	2.18	2.21	3.20	2.46	3.35	2.15	1.76	1.96	2.01
16	1.91	1.91	1.96	2.18	2.21	3.93	2.45	3.27	2.16	1.86	1.83	2.00
17	1.97	1.90	1.89	2.10	2.25	4.25	2.39	3.23	2.05	1.83	1.79	1.91
18	1.91	1.88	1.99	2.10	2.14	4.05	2.34	3.00	2.04	1.84	1.83	1.93
19	1.90	1.86	1.97	2.19	2.17	4.10	2.33	2.83	2.05	1.82	1.83	1.93
20	1.89	1.91	1.92	2.19	2.18	3.75	2.30	2.73	2.08	1.81	1.91	1.95
21	1.88	1.91	1.95	2.35	2.27	3.59	2.28	2.79	2.05	1.89	1.84	2.09
22	1.99	1.91	1.93	3.09	2.16	3.68	2.24	2.71	2.09	1.79	1.97	2.01
23	1.94	1.89	1.95	2.81	2.25	4.32	2.39	2.56	2.00	1.80	1.84	2.51
24	2.06	1.87	1.91	2.68	2.12	4.62	2.25	2.49	1.87	1.87	1.81	2.58
25	2.01	1.86	1.86	2.69	2.25	4.20	2.22	2.45	1.97	1.89	1.81	2.28
26	1.99	1.81	2.04	2.56	2.17	3.72	2.18	2.43	2.12	1.81	1.77	2.18
27	1.96	1.86	1.99	2.50	2.38	3.36	2.17	2.35	2.10	1.86	1.80	2.10
28	1.91	1.88	2.22	2.38	2.27	3.28	2.58	2.35	1.98	2.71	2.41	2.12
29	1.87	1.88	2.07	2.37	-------	2.97	4.04	2.26	1.99	2.03	2.65	2.31
30	1.97	1.86	1.94	2.42	-------	2.90	3.72	2.21	1.96	1.93	2.18	2.20
31	1.95	-------	1.97	2.39	-------	2.84	-------	2.16	-------	2.05	2.12	-------

Daily discharge, in second-feet, of Lackawanna River at Moosic, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	90	98	92	840	315	250	510	920	205	108	140	124
2	94	108	96	720	320	250	450	685	225	132	104	112
3	112	120	88	510	390	880	480	545	280	140	100	98
4	94	116	104	420	280	1,800	580	480	545	96	160	116
5	96	94	108	366	310	2,000	880	420	265	116	128	112
6	94	120	108	336	305	1,400	1,400	360	450	124	120	116
7	96	116	92	270	265	1,130	1,080	342	330	116	100	100
8	205	116	160	265	265	920	880	325	420	88	90	260
9	136	124	140	255	275	800	650	1,500	336	108	92	348
10	354	112	124	235	280	685	580	1,400	250	112	84	250
11	185	90	98	215	255	650	545	1,040	220	98	86	210
12	160	86	96	215	265	760	545	1,310	215	98	84	176
13	124	104	100	220	315	920	480	1,600	210	76	92	164
14	108	100	100	230	230	880	420	1,310	200	94	84	136
15	88	112	128	220	235	880	366	1,000	205	72	124	144
16	104	104	124	220	235	1,500	360	920	210	92	86	140
17	128	100	98	180	255	1,800	325	920	160	86	78	104
18	104	96	136	180	200	1,600	300	720	156	88	86	112
19	100	92	128	190	215	1,700	295	615	160	84	86	112
20	98	104	112	190	220	1,400	280	545	172	82	104	120
21	96	104	120	305	265	1,130	270	580	160	84	88	176
22	108	104	112	720	210	1,310	250	510	148	78	128	144
23	116	98	120	580	255	1,900	290	420	140	80	88	390
24	164	94	104	510	190	2,220	255	384	94	94	82	450
25	144	92	98	450	255	1,800	240	360	128	84	82	270
26	136	82	156	420	215	1,310	220	348	190	82	74	220
27	124	92	136	390	320	1,000	215	305	180	92	80	180
28	104	96	240	320	265	960	450	305	132	510	336	190
29	94	96	168	315	-------	685	1,600	260	136	152	480	285
30	128	92	116	342	-------	650	1,310	235	124	112	220	230
31	120	-------	128	325	-------	615	-------	210	-------	160	190	-------

Monthly discharge of Lackawanna River at Moosic, for the year ending September 30, 1923.
(Drainage area 265 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	354	88	126	0.475	0.55
November	124	82	102	.385	.43
December	240	88	120	.453	.52
January	840	180	353	1.33	1.53
February	390	190	264	.996	1.04
March	2,220	250	1,150	4.34	5.00
April	1,600	215	550	2.08	2.32
May	1,600	210	673	2.54	2.93
June	545	94	222	.838	.94
July	510	72	114	.430	.50
August	480	74	125	.472	.54
September	450	98	186	.702	.78
The Year	2,220	72	334	1.26	17.08

SUSQUEHANNA BASIN—STATION NO. 7

NORTH BRANCH SUSQUEHANNA RIVER AT WILKES-BARRE

Location.—At four-span steel highway bridge, Market Street, Wilkes-Barre, Luzerne County.

Drainage Area.—9,960 square miles.

Records Available.—November 1, 1890, to September 30, 1923.

Gage.—Standard chain attached to upstream side of bridge; read by Milton Wentz. Elevation of gage zero 511.03 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge, except in extremely high stages when they are taken from the Port Bowkley railroad bridge, where the entire discharge of the stream is confined to one channel without overflow.

Channel and Control.—Right bank is low and subject to overflow at a stage of about 18.5 feet; left bank subject to overflow only at extremely high stages. Bed is composed of culm, sand and gravel. Control for low stages is at a riffle about 4,000 feet below gage; occasionally shifting. For high stages the control is probably the dam at Nanticoke, 9 miles below gage.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 19.6 feet at 2 a. m. March 5 (discharge, 91,800 second-feet); minimum, 1.70 feet August 27 and 28 (discharge, 1,060 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation probably permanent except when affected by ice. Rating curve well defined between 1,300 and 160,000 second-feet. Gage read to hundredths once daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height, computed from a continuous daily hydrograph, obtained by plotting daily gage readings, to rating table. Results good.

The following discharge measurement was made by J. M. Snavely: No. 62, August 14: Gage height, 2.02 feet; discharge, 1,360 second feet.

Daily Mean Gage Height, in feet, of North Branch Susquehanna River at Wilkes-Barre, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.47	2.51	2.58	4.97	4.29	3.47	7.21	7.05	3.91	2.44	2.34	2.14
2	2.39	2.46	2.60	7.96	4.64	3.54	6.78	7.11	3.72	2.44	2.33	2.09
3	2.34	2.51	2.59	8.84	5.07	4.04	6.24	6.53	3.58	2.43	2.30	2.07
4	2.32	2.42	2.72	8.52	5.79	7.24	6.10	5.95	3.52	2.43	2.38	2.07
5	2.29	2.40	3.28	7.31	5.86	18.41	6.77	5.46	3.43	2.43	2.44	2.07
6	2.24	2.37	3.42	6.36	6.18	15.54	13.24	5.12	3.36	2.40	2.41	2.11
7	2.24	2.42	3.30	5.73	5.51	12.27	16.57	4.92	3.75	2.50	2.36	2.11
8	2.26	2.42	3.21	5.23	5.11	10.04	14.63	4.79	4.42	2.54	2.32	2.11
9	2.34	2.51	3.14	4.80	5.01	8.74	12.72	5.64	5.03	2.50	2.30	2.23
10	2.50	2.51	3.26	4.52	5.21	8.10	11.00	7.00	5.78	2.43	2.24	2.61
11	2.53	2.50	3.57	4.32	4.93	7.52	9.69	8.55	5.46	2.32	2.14	2.45
12	2.66	2.58	3.69	4.58	4.62	7.63	8.81	8.26	5.18	2.28	2.10	2.24
13	2.89	2.70	3.26	4.15	4.42	9.38	8.14	9.52	4.76	2.23	2.15	2.26
14	3.19	2.70	2.91	3.86	-------	10.92	7.64	9.74	4.31	2.18	2.00	2.41
15	2.99	2.70	2.53	3.57	-------	9.50	7.23	8.82	4.13	2.11	1.99	2.31
16	2.91	2.64	2.68	3.42	-------	9.27	6.94	7.78	3.89	2.04	1.99	2.18
17	2.89	2.54	2.94	3.54	-------	14.02	6.36	8.28	3.75	2.00	1.96	2.07
18	2.73	2.52	2.42	3.24	4.31	16.12	6.08	9.68	3.61	2.00	1.92	2.00
19	2.62	2.50	2.40	3.23	3.92	14.74	5.81	8.66	3.49	2.00	1.87	2.08
20	2.54	2.72	2.32	2.75	3.80	14.10	5.58	7.63	3.23	2.00	1.83	2.06
21	2.48	2.72	2.30	4.09	3.67	12.34	5.44	6.97	3.18	2.00	1.80	2.20
22	2.44	2.78	2.30	4.87	3.78	11.13	5.24	7.05	3.04	2.00	1.78	2.18
23	2.42	2.70	2.44	5.32	2.81	12.23	5.13	7.13	2.89	1.98	1.74	2.33
24	2.38	2.64	2.87	5.90	3.61	15.22	5.01	6.42	2.76	1.97	1.74	2.62
25	2.38	2.62	2.89	6.40	3.54	16.36	4.94	5.82	2.68	1.97	1.74	2.68
26	2.40	2.60	2.93	6.62	3.48	15.03	4.82	5.34	2.57	1.97	1.73	3.27
27	2.46	2.58	2.93	5.88	3.53	12.65	4.58	5.03	2.49	1.93	1.70	3.28
28	2.70	2.58	3.08	5.14	3.62	10.89	4.41	4.83	2.41	2.08	1.74	3.20
29	2.73	2.58	3.00	4.70	-------	9.51	4.74	4.52	2.50	2.55	2.31	3.18
30	2.67	2.58	3.00	4.89	-------	8.45	5.88	4.28	2.43	2.52	2.47	3.11
31	2.60	-------	3.12	4.73	-------	7.61	-------	4.13	-------	2.34	2.27	-------

NOTE.—Stage-discharge relation Dec. 16-19, 23-30, Jan. 30, 31 and Feb. 3-5 affected by ice. Gage height Feb. 14-17 not observed on account of broken gage.

Daily discharge, in second-feet, of North Branch Susquehanna River at Wilkes-Barre, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,880	1,960	2,120	8,270	5,990	3,920	17,000	16,100	4,890	1,880	1,740	1,500
2	1,810	1,880	2,120	20,400	6,920	3,920	15,300	16,500	4,390	1,880	1,740	1,440
3	1,740	1,960	2,120	24,000	7,500	5,150	12,900	14,100	4,150	1,880	1,670	1,380
4	1,670	1,810	2,290	22,700	8,500	17,000	12,500	12,100	3,920	1,880	1,810	1,380
5	1,670	1,810	3,480	17,400	10,000	81,500	15,300	10,100	3,700	1,880	1,880	1,380
6	1,610	1,740	3,700	13,700	12,900	58,900	45,700	8,630	3,700	1,810	1,810	1,440
7	1,610	1,810	3,480	10,900	10,100	41,000	66,900	7,920	4,640	1,960	1,740	1,440
8	1,610	1,810	3,270	9,000	8,630	29,600	53,200	7,580	6,290	2,040	1,670	1,440
9	1,740	1,960	3,060	7,580	8,270	23,600	43,100	10,500	8,270	1,960	1,670	1,610
10	1,960	1,960	3,480	6,600	9,000	20,900	34,500	16,100	11,300	1,880	1,610	2,120
11	2,040	1,960	4,150	5,990	7,920	18,200	28,200	23,200	10,100	1,670	1,500	1,880
12	2,200	2,120	4,390	6,920	6,920	18,700	24,000	21,800	9,000	1,670	1,440	1,610
13	2,660	2,290	3,480	5,700	6,290	26,800	20,900	27,200	7,580	1,610	1,500	1,610
14	3,060	2,290	2,660	4,890	6,500	34,000	18,700	28,200	5,990	1,550	1,330	1,810
15	2,860	2,290	2,040	4,150	7,500	27,200	17,000	24,000	5,420	1,440	1,330	1,670
16	2,660	2,200	1,800	3,700	6,500	26,300	15,700	19,600	4,890	1,380	1,330	1,550
17	2,660	2,040	1,700	3,920	5,500	49,900	13,700	21,800	4,640	1,330	1,280	1,380
18	2,290	1,960	1,700	3,270	5,990	63,100	12,500	28,200	4,150	1,330	1,230	1,330
19	2,120	1,960	1,700	3,270	4,890	53,800	11,300	23,600	3,920	1,330	1,180	1,440
20	2,040	2,290	1,670	4,640	4,640	50,400	10,500	18,700	3,270	1,330	1,180	1,380
21	1,960	2,290	1,670	5,420	4,390	41,000	9,750	16,100	3,270	1,330	1,140	1,550
22	1,880	2,470	1,670	7,920	4,640	34,900	9,000	16,100	2,860	1,330	1,140	1,550
23	1,810	2,290	1,700	9,370	4,640	40,500	8,630	16,500	2,660	1,330	1,100	1,740
24	1,810	2,200	1,700	11,700	4,150	56,900	8,270	13,700	2,470	1,280	1,100	2,120
25	1,810	2,120	1,700	13,700	3,920	65,300	7,920	11,300	2,290	1,280	1,100	2,290
26	1,810	2,120	1,800	14,500	3,920	55,600	7,580	9,370	2,040	1,280	1,100	3,480
27	1,880	2,120	1,900	11,700	3,920	42,500	6,920	8,270	1,960	1,280	1,060	3,480
28	2,290	2,120	2,000	8,630	4,150	34,000	6,290	7,580	1,810	1,440	1,100	3,270
29	2,290	2,120	2,200	7,250	-------	27,200	7,250	6,600	1,960	2,040	1,670	3,270
30	2,200	2,120	2,400	6,500	-------	22,200	11,700	5,990	1,880	1,960	1,880	3,060
31	2,120	-------	3,060	6,500	-------	18,700	-------	5,420	-------	1,740	1,610	-------

NOTE.—Discharge Dec. 16-19, 23-30, Jan. 30, 31 and Feb. 3-5 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for North Branch Susquehanna River at Towanda and Danville. Discharge Feb. 14-17 estimated, because of no gage height record, from discharge of North Branch Susquehanna River at Danville.

Monthly discharge of North Branch Susquehanna River at Wilkes-Barre, for the year ending September 30, 1923.
(Drainage area 9,960 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	3,060	1,610	2,060	0.207	0.24
November	2,470	1,740	2,070	.208	.23
December	4,390	1,670	2,460	.247	.28
January	24,000	3,270	9,360	.940	1.08
February	12,900	3,920	6,580	.661	.69
March	81,500	3,920	35,200	3.53	4.07
April	66,900	6,290	19,100	1.92	2.14
May	28,200	5,420	15,300	1.54	1.78
June	11,300	1,810	4,580	.460	.51
July	2,040	1,280	1,610	.162	.19
August	1,880	1,060	1,440	.145	.17
September	3,480	1,330	1,890	.190	.21
The Year	81,500	1,060	8,500	.853	11.59

SUSQUEHANNA BASIN—STATION NO. 8

WAPWALLOPEN CREEK NEAR WAPWALLOPEN.

Location.—At single-span steel highway bridge, known as Harts Bridge, three and one-half miles southeast of Wapwallopen, Luzerne County, and three and one-half miles above mouth of creek.

Drainage Area.—46 square miles.

Records Available.—October 24, 1919, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by Calvin P. Readler.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Left bank is high and not subject to overflow; right is of medium height and becomes inundated during extremely high stages. Bed is composed of gravel and boulders. Control is at a riffle about 1,000 feet below gage, where bed is composed of a compact formation of coarse gravel and boulders; probably permanent.

Extremes of Discharge.—Maximum open-water stage during the year, 5.80 observed at 7 a. m. July 28 (discharge, about 1,160 second-feet); a stage of 6.0 feet, estimated from hydrograph, was reached at 10 p. m. January 1, but the water was held back by an ice jam; minimum, 0.76 foot at 6.20 a. m. October 30 and 5.30 p. m. October 31 (discharge, 3 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Regulation.—The operation of grist mills above the station may cause variation in stage during low flows. There is very little storage at the mill dam one and one half miles above the gage; at the dam three and one-half miles above the gage there is some storage and flow during part of day, at time of low water, can probably be stored.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined between 4 and 300 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for extremely high stages when they are fair.

Cooperation.—Station is maintained in cooperation with M. O. Leighton, Consulting Engineer, Washington, D. C.

The following discharge measurement was made by H. J. McIntyre: No. 15, July 18; Gage height, 0.96 foot; discharge 7.32 second feet. Measurement made by wading 300 feet above gage.

Daily Mean Gage Height, in feet, of Wapwallopen Creek near Wapwallopen, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.85	0.95	0.95	3.46	2.20	2.29	1.80	1.87	1.44	1.07	2.12	1.03
2	.82	.97	.90	-------	2.15	2.41	1.69	1.77	1.45	1.17	1.89	.99
3	.89	.98	.91	2.63	2.09	3.03	1.63	1.80	1.52	1.16	1.74	1.01
4	.83	.93	.84	2.05	1.96	4.35	1.67	1.62	1.97	1.18	1.70	.99
5	.88	.90	.90	1.78	1.95	5.04	1.81	1.57	1.66	1.24	1.61	1.00
6	.82	.93	.95	1.71	1.81	3.95	2.19	1.52	1.71	1.09	1.55	.96
7	.83	.92	.85	1.68	2.04	-------	1.76	1.49	1.73	1.08	1.50	.98
8	.95	.93	.99	1.83	2.10	3.05	1.74	1.63	1.77	1.07	1.34	.99
9	1.24	.92	1.10	1.88	2.08	2.40	1.73	2.91	1.80	1.04	1.29	1.20
10	1.09	.90	1.06	1.67	2.07	2.28	1.66	2.46	1.64	.95	1.31	1.06
11	1.19	.89	.84	1.35	1.93	2.15	1.65	2.35	1.57	1.41	1.31	.97
12	.97	.94	.88	1.58	1.91	2.55	1.57	2.88	1.57	1.12	1.28	.95
13	1.04	.89	.85	1.32	2.17	2.73	1.56	2.82	1.56	1.14	1.28	.94
14	.95	.87	.91	1.16	2.18	2.50	1.54	2.45	1.54	1.02	1.24	.96
15	.91	.89	.97	1.45	1.96	2.23	1.53	2.32	1.55	1.04	1.19	.91
16	1.00	.89	1.06	1.64	2.08	2.58	1.51	2.40	1.28	.96	1.15	1.02
17	1.16	.93	1.12	1.58	1.96	2.94	1.50	2.62	1.41	.95	1.12	.99
18	1.15	1.00	.96	1.88	2.10	2.79	1.47	2.28	1.49	.94	1.14	.93
19	.91	.87	.91	1.62	2.21	2.72	1.43	2.18	1.26	.96	1.17	.90
20	1.00	.91	.86	1.85	2.17	2.84	1.42	2.20	1.13	.89	1.13	.91
21	.89	.90	.91	2.32	2.25	2.32	1.39	2.20	1.28	.85	1.10	1.08
22	.83	.89	1.03	2.98	2.20	2.31	1.39	2.11	1.06	.84	1.28	1.16
23	.90	.88	1.12	2.35	2.13	2.32	1.40	1.95	1.20	.88	1.21	1.39
24	.97	.92	1.19	2.33	2.02	2.34	1.38	1.90	1.23	.84	1.05	1.16
25	.90	.97	1.15	2.56	1.99	2.11	1.35	1.75	1.16	.85	1.04	.96
26	1.00	.86	1.14	2.26	2.15	2.01	1.31	1.68	1.10	.84	1.07	.97
27	1.06	.84	1.18	2.32	2.27	1.92	1.30	1.64	1.23	1.25	1.03	1.03
28	.95	.86	1.36	2.25	2.35	1.87	2.01	1.61	1.13	5.45	1.15	1.02
29	.90	.85	1.38	2.23	-------	1.83	2.76	1.57	1.34	3.97	1.50	.98
30	.80	.85	1.28	2.04	-------	1.71	2.01	1.51	1.18	2.49	1.19	1.06
31	.84	-------	1.41	1.93	-------	1.77	-------	1.48	-------	2.28	1.06	-------

NOTE.—Stage-discharge relation Dec. 23, 24, 26, 27, Dec. 30 to Jan. 2, Jan. 4-13 and Jan. 15 to Mar. 8 affected by ice. Gage height Jan. 2 and Mar. 7 not observed.

Daily discharge, in second-feet, of Wapwallopen Creek near Wapwallopen, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5	7	7	150	50	26	71	79	36	11	108	10
2	4	7	6	320	50	24	59	68	36	16	82	8
3	6	8	6	193	46	120	53	71	43	16	64	9
4	5	7	5	75	46	420	57	52	91	17	60	8
5	6	6	6	50	46	700	72	47	56	20	51	8
6	4	7	7	42	36	420	122	43	61	12	46	7
7	5	6	5	40	46	280	67	40	63	12	41	8
8	7	7	8	50	46	220	64	53	68	11	27	8
9	20	6	12	50	42	151	63	240	71	10	23	18
10	12	6	11	36	40	136	56	159	54	7	25	11
11	17	6	5	26	32	115	55	144	47	33	25	7
12	7	7	6	32	32	176	47	240	47	14	23	7
13	10	6	5	20	40	212	46	221	46	15	23	7
14	7	5	6	16	50	167	45	159	45	9	20	7
15	6	6	7	20	32	129	44	136	46	10	17	6
16	8	6	11	24	36	184	42	151	23	7	15	9
17	16	7	14	20	34	250	41	184	33	7	14	7
18	15	8	7	32	42	221	38	136	40	7	15	7
19	6	5	6	18	40	202	35	122	22	7	16	6
20	8	6	5	24	32	144	34	122	14	6	14	6
21	6	6	6	65	36	136	31	122	23	5	12	12
...	5	6	10	120	36	136	31	108	11	5	23	16
23	6	6	7	90	28	136	32	89	18	6	19	51
24	7	6	7	85	24	144	30	83	20	5	10	16
25	6	7	15	110	20	108	28	86	16	5	10	7
26	8	5	6	90	22	95	25	58	12	5	11	7
27	11	5	8	95	28	85	24	54	20	21	10	10
28	7	5	29	75	30	79	95	51	14	995	15	9
29	6	5	30	70	-------	75	212	47	27	510	41	8
30	4	5	18	50	-------	61	95	42	17	167	17	11
31	5	-------	17	40	-------	68	-------	39	-------	136	11	-------

Note.—Discharge Dec. 23, 24, 26, 27, Dec. 30 to Jan. 2, Jan. 4-13 and Jan. 15 to Mar. 8 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Nescopeck Creek near St. Johns and Fishing Creek at Bloomsburg.

Monthly discharge of Wapwallopen Creek near Wapwallopen, for the year ending September 30, 1923.

(Drainage area 46 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	20	4	7.90	0.172	0.20
November	8	5	6.17	.134	.15
December	30	5	9.61	.209	.24
January	320	16	68.6	1.49	1.72
February	50	20	37.2	.809	.84
March	700	24	175	3.80	4.38
April	212	24	57.1	1.24	1.38
May	240	39	104	2.26	2.61
June	91	11	37.3	.811	.90
July	995	5	68.0	1.48	1.71
August	108	10	28.6	.622	.72
September	31	6	9.70	.211	.24
The Year	995	4	51.1	1.11	15.09

SUSQUEHANNA BASIN—STATION NO. 9

NESCOPECK CREEK NEAR ST. JOHNS

Location.—At single-span steel highway bridge, the first above the Wilkes-Barre & Hazleton Railway bridge, near St. Johns, Luzerne County.

Drainage Area.—49 square miles.

Records Available.—July 13, 1916, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by John Klinger. Elevation of gage zero 1,116.47 feet, United States Geological Survey datum.

Discharge measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and boulders. Control consists of boulders 50 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 5.9 feet at midnight July 28-29 (discharge, about 1,350 second-feet); minimum, 1.02 feet at 5 p. m. July 23 and 7 a. m. September 19 (discharge, 6 second-feet).

Ice.—Stage-discharge relation seriously affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 100 second-feet and fairly well defined between 100 and 500 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for medium and high stages when they are fair.

The following discharge measurement was made by H. J. McIntyre: No. 24, August 14; Gage height, 1.64 feet; discharge, 36.1 second-feet.

Daily Mean Gage Height, in feet, of Nescopeck Creek near St. Johns, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.14	1.27	1.25	2.61	3.03	2.35	2.09	2.17	1.57	1.42	2.66	1.34
2	1.14	1.26	1.24	2.89	2.73	2.41	1.96	1.90	1.52	1.32	2.51	1.35
3	1.14	1.27	1.24	2.87	2.16	2.98	1.92	1.85	1.48	1.26	2.47	1.38
4	1.14	1.26	1.24	2.73	2.53	3.85	1.96	1.79	2.25	1.33	2.42	1.36
5	1.14	1.25	1.31	2.28	3.04	4.02	2.10	1.75	2.01	1.43	2.31	1.36
6	1.14	1.27	1.38	2.16	3.55	3.80	2.51	1.71	2.49	1.40	2.20	1.40
7	1.14	1.34	1.58	2.26	3.85	3.60	2.17	1.63	2.26	1.32	1.95	1.39
8	1.40	1.32	1.58	2.34	3.88	3.02	2.13	1.58	2.91	1.24	1.88	1.47
9	1.64	1.32	1.58	2.40	3.95	2.76	2.09	3.04	2.11	1.21	1.82	1.59
10	1.69	1.30	1.48	2.33	2.75	2.68	2.04	3.01	1.95	1.17	1.70	1.42
11	1.80	1.28	1.59	2.38	2.48	2.60	1.97	2.69	1.90	1.63	1.59	1.25
12	1.54	1.28	1.84	2.62	2.48	2.66	1.93	2.71	1.83	1.30	1.65	1.19
13	1.45	1.26	1.90	2.68	2.48	2.74	1.89	3.03	1.79	1.20	1.58	1.27
14	1.35	1.26	1.88	2.54	2.48	2.85	1.86	2.93	1.60	1.15	1.54	1.21
15	1.28	1.30	1.88	2.54	2.46	2.88	1.83	2.74	1.63	1.15	1.51	1.15
16	1.28	1.28	1.80	2.54	2.63	2.88	1.80	2.67	1.61	1.14	1.46	1.12
17	1.28	1.28	1.73	2.50	3.00	3.36	1.74	2.58	1.33	1.17	1.38	1.09
18	1.32	1.26	1.66	2.50	2.82	3.27	1.67	2.54	1.25	1.15	1.28	1.04
19	1.35	1.26	1.66	2.49	2.49	3.31	1.62	2.49	1.27	1.12	1.44	1.09
20	1.30	1.26	1.61	2.26	2.48	2.96	1.59	2.39	1.53	1.08	1.33	1.20
21	1.26	1.26	1.58	2.42	2.47	2.80	1.54	2.44	1.52	1.04	1.19	1.30
22	1.28	1.24	1.52	3.04	2.30	2.84	1.54	2.42	1.53	1.08	1.22	1.35
23	1.30	1.23	1.51	2.99	2.31	2.89	1.59	2.36	1.47	1.03	1.28	1.40
24	1.32	1.22	1.50	2.98	2.32	3.01	1.57	2.32	1.49	1.12	1.22	1.47
25	1.32	1.22	1.50	3.00	2.28	2.82	1.53	2.08	1.42	1.16	1.17	1.41
26	1.32	1.19	1.54	2.71	2.28	2.65	1.47	1.95	1.37	1.12	1.45	1.38
27	1.32	1.19	1.58	2.43	2.30	2.40	1.42	1.86	1.37	1.17	1.37	1.34
28	1.32	1.26	1.59	2.34	2.29	2.28	1.37	1.80	1.39	4.24	1.43	1.30
29	1.30	1.26	2.33	2.34	-------	2.26	2.43	1.74	1.64	4.62	1.47	1.28
30	1.29	1.26	2.40	2.26	-------	2.25	2.30	1.69	1.48	3.33	1.41	1.23
31	1.28	-------	2.40	2.41	-------	2.25	-------	1.63	-------	2.71	1.34	-------

Note.—Stage-discharge relation Dec. 8 to Mar. 4 affected by ice.

Daily discharge, in second-feet, of Nescopeck Creek near St. Johns, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9	13	12	50	50	22	97	106	29	20	203	16
2	9	13	12	240	50	24	75	66	25	15	171	16
3	9	13	12	240	42	36	69	59	23	13	161	18
4	9	13	12	110	42	360	75	51	123	16	151	17
5	9	12	14	60	50	570	97	46	81	20	132	17
6	9	13	18	46	65	505	171	41	171	19	114	19
7	9	16	30	42	65	445	106	34	123	15	74	18
8	19	15	28	50	75	283	106	30	259	12	63	22
9	35	15	19	55	50	225	97	283	97	11	55	30
10	39	14	14	40	40	214	89	283	74	10	40	20
11	52	13	12	46	36	192	76	214	66	34	30	12
12	27	13	14	50	36	203	70	214	60	14	36	11
13	22	13	22	28	36	225	65	283	51	11	30	13
14	16	13	24	16	36	248	60	271	31	9	27	11
15	13	14	22	15	36	259	56	225	34	9	25	9
16	13	13	22	16	40	259	52	203	32	9	22	9
17	13	13	22	19	46	387	45	192	16	10	18	8
18	15	13	19	22	36	360	37	182	12	9	13	7
19	16	13	14	22	32	360	34	171	13	9	21	8
20	14	13	12	19	30	271	30	151	26	8	16	11
21	13	13	12	30	28	236	27	161	25	7	11	14
22	13	12	11	120	20	248	27	151	26	8	12	16
23	14	12	11	130	20	259	30	142	22	6	13	19
24	15	12	11	110	20	283	29	132	24	9	12	22
25	15	12	11	110	19	236	26	97	20	10	10	20
26	15	11	11	75	19	203	22	74	18	9	22	18
27	15	11	12	60	20	151	20	60	18	10	18	16
28	15	13	13	50	22	132	18	52	18	640	20	14
29	14	13	28	50	-------	123	161	45	35	785	22	13
30	14	13	36	46	-------	123	132	39	23	360	20	12
31	13	-------	36	40	-------	123	-------	34	-------	214	16	-------

Note.—Discharge Dec. 8 to Mar. 4 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Wapwallopen Creek near Wapwallopen and Little Swatara Creek near Pine Grove.

Monthly discharge of Nescopeck Creek near St. Johns, for the year ending September 30, 1923.
(Drainage area, 49 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	52	9	16.5	0.337	0.39
November	16	11	13.0	.265	.30
December	36	11	17.6	.359	.41
January	240	15	64.7	1.32	1.52
February	75	19	37.9	.773	.80
March	570	22	244	4.98	5.74
April	171	18	66.6	1.36	1.52
May	283	30	132	2.69	3.10
June	259	12	52.5	1.07	1.19
July	785	6	75.2	1.53	1.76
August	203	10	50.9	1.04	1.20
September	30	7	15.2	.310	.35
The Year	785	6	66.1	1.35	18.28

SUSQUEHANNA BASIN—STATION NO. 10

FISHING CREEK AT BLOOMSBURG

Location.—At single-span, wooden covered, highway bridge, known as Red Rock Bridge, Bloomsburg, Columbia County.

Drainage Area.—355 square miles.

Records Available.—January 27, 1914, to September 30, 1923.

Gage.—Standard chain attached to upstream side of bridge; read by L. Norman Cox.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of sand and gravel. Control is at a riffle, where the bed is composed of gravel, about 700 feet below gage; practically permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 12.0 feet at 10 a. m. July 29 (discharge, about 13,200 second-feet); minimum, 1.60 feet at 5.30 p. m. November 25, 4.45 p. m. November 26 and 5.05 p. m. November 28 (discharge, 4 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage discharge relation permanent. Rating curve well defined below 600 second-feet and fairly well defined between 600 and 2,200 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for medium and high stages when they are fair.

Discharge measurements of Fishing Creek at Bloomsburg, during the year ending September 30, 1923.

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.ft.
22	Oct. 23a	H. J. McIntyre	2.04	47.2
23	Dec. 1b	do	1.73	14.4
24	1b	do	1.73	15.8
25	July 18b	J. M. Snavely	1.90	22.3

a Measurement made by wading 200 feet above gage.
b Measurement made by wading 500 feet above gage.

Daily Mean Gage Height, in feet, of Fishing Creek at Bloomsburg, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.98	2.16	2.03	4.97	3.40	2.99	3.51	3.66	2.88	1.97	4.32	2.46
2	2.20	2.19	1.85	5.90	3.28	2.85	3.54	3.44	2.85	2.22	3.88	2.68
3	1.99	2.23	2.09	4.62	3.30	3.23	3.51	3.31	2.75	2.20	3.61	2.40
4	2.00	2.10	2.01	4.13	3.24	5.65	3.76	3.24	2.76	1.94	3.72	2.29
5	1.96	2.02	2.00	3.77	3.20	8.08	4.93	3.19	2.63	2.33	3.55	2.25
6	1.92	2.18	2.09	3.55	3.17	6.34	6.68	3.12	2.85	2.30	3.55	2.55
7	1.90	2.10	1.94	3.23	3.11	5.95	5.33	3.04	3.49	2.25	3.11	2.32
8	2.04	2.18	2.28	3.21	3.30	4.89	4.73	3.00	3.23	2.28	2.91	2.55
9	2.45	2.19	2.41	3.30	3.09	4.36	4.45	4.62	3.01	2.19	2.83	2.95
10	2.82	2.20	2.33	3.13	3.14	4.19	4.09	4.60	2.81	1.92	2.72	2.72
11	2.90	2.15	2.03	2.85	3.13	4.00	3.88	4.17	2.66	2.28	2.68	2.69
12	2.65	1.98	2.01	2.99	3.07	4.80	3.69	4.82	2.77	2.30	2.64	2.59
13	2.54	2.09	2.16	2.85	3.00	5.47	3.56	6.77	2.66	1.93	2.67	2.52
14	2.45	1.84	2.52	2.37	3.06	5.44	3.49	5.60	2.60	2.17	2.60	2.13
15	2.45	1.79	2.20	2.68	2.89	5.02	3.36	4.80	2.58	2.19	2.51	2.09
16	2.51	1.76	2.18	2.91	3.01	6.57	3.32	4.60	2.44	1.83	2.50	2.12
17	2.64	1.76	2.45	2.91	3.08	7.86	3.23	5.00	2.02	1.81	2.50	2.22
18	2.72	1.73	2.30	2.88	3.07	6.74	3.14	4.40	1.98	2.14	2.49	1.93
19	2.63	1.74	2.74	2.62	3.03	6.66	3.11	4.16	2.22	2.14	2.43	1.92
20	2.52	1.84	2.46	2.86	2.95	5.52	3.03	3.93	2.11	1.93	2.39	1.95
21	2.39	1.74	1.85	2.92	2.99	5.08	2.96	4.36	1.91	1.91	2.38	3.40
22	2.29	1.67	2.10	4.15	2.91	5.19	2.94	4.33	1.84	1.90	2.41	3.45
23	2.25	1.68	2.20	3.92	2.93	6.03	2.85	4.05	2.24	1.89	2.42	3.59
24	2.25	1.66	2.11	3.86	2.97	7.57	2.84	3.85	2.08	1.90	2.39	4.29
25	2.22	1.65	2.46	4.11	2.76	6.02	2.78	3.67	2.24	1.95	2.34	3.50
26	2.28	1.90	1.99	3.86	2.82	5.34	2.75	3.50	1.96	1.90	2.30	3.21
27	2.27	1.72	1.98	3.73	2.87	4.84	2.71	3.39	2.30	2.05	2.34	2.04
28	2.22	1.70	2.30	3.52	2.87	4.59	3.08	3.26	2.27	7.49	2.91	2.90
29	2.20	1.72	2.95	3.37	-------	4.40	4.55	3.13	2.63	10.50	4.50	2.92
30	2.20	1.76	2.91	3.31	-------	4.13	3.86	3.03	1.97	6.02	3.42	2.78
31	2.18	-------	2.52	3.13	-------	3.92	-------	2.99	-------	4.80	2.98	-------

Daily discharge, in second-feet, of Fishing Creek at Bloomsburg, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	35	55	40	1,600	410	227	470	560	195	34	1,010	101
2	60	59	22	2,510	350	188	500	434	188	63	720	146
3	36	64	47	1,250	360	325	470	365	162	60	530	90
4	37	48	38	895	330	2,180	620	330	165	31	590	73
5	33	39	37	620	310	5,560	1,510	306	135	79	500	67
6	29	58	47	500	298	2,960	3,500	278	188	74	500	118
7	27	48	31	325	274	2,630	1,880	246	464	67	274	77
8	41	58	72	315	360	1,510	1,330	230	325	72	203	118
9	99	59	92	360	266	1,050	1,130	1,250	234	59	182	215
10	180	60	79	282	286	930	860	1,250	178	29	155	155
11	200	54	40	188	282	790	720	895	141	72	146	148
12	139	35	38	227	258	1,420	590	1,420	168	74	137	126
13	116	47	55	188	230	2,080	500	3,630	141	30	143	112
14	99	22	112	85	254	1,980	464	2,180	128	56	128	52
15	99	17	60	146	198	1,600	390	1,420	124	59	110	47
16	110	15	58	203	234	3,370	370	1,250	97	21	108	50
17	137	15	99	203	262	5,240	325	1,600	39	19	108	63
18	155	12	74	195	258	3,500	286	1,090	35	53	106	30
19	135	13	160	132	242	3,500	274	895	63	53	95	29
20	112	22	101	190	215	2,080	242	755	49	30	88	40
21	88	13	22	206	227	1,690	218	1,050	28	28	87	365
22	73	8	48	895	203	1,780	212	1,050	22	27	92	440
23	67	9	60	720	209	2,630	188	825	66	26	94	530
24	67	8	49	685	221	4,770	185	685	46	27	88	1,010
25	63	7	101	860	165	2,630	170	560	66	32	80	470
26	72	27	36	685	180	1,880	162	470	33	27	74	315
27	70	12	35	620	192	1,420	152	405	74	42	80	246
28	63	10	74	470	192	1,250	262	340	70	4,620	203	209
29	60	12	215	395	-------	1,090	1,250	282	135	10,000	1,170	206
30	60	15	203	365	-------	895	685	242	34	2,630	422	170
31	58	-------	112	282	-------	720	-------	227	-------	1,420	224	-------

Monthly discharge of Fishing Creek at Bloomsburg, for the year ending September 30, 1923.
(Drainage area, 355 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	200	27	84.5	0.238	0.27
November	64	7	30.7	.086	.10
December	215	22	72.8	.205	.24
January	2,510	85	535	1.51	1.74
February	410	165	260	.732	.76
March	5,560	188	2,060	5.80	6.69
April	3,500	152	664	1.87	2.09
May	3,630	227	855	2.41	2.78
June	464	22	126	.355	.40
July	10,000	19	642	1.81	2.09
August	1,170	74	272	.766	.88
September	1,010	29	194	.546	.61
The Year	10,000	7	488	1.37	18.65

SUSQUEHANNA BASIN—STATION NO. 11

NORTH BRANCH SUSQUEHANNA RIVER AT DANVILLE

Location.—At seven-span steel highway bridge between South Danville and Danville, Montour County.

Drainage Area.—11,200 square miles.

Records Available.—March 25, 1899, to December 31, 1903, and March 23, 1905, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by E. F. Bell. Elevation of gage zero 430.47 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Left bank is high and not subject to overflow; right bank subject to overflow at extremely high stages. Bed is composed of gravel and rock. Control is at a riffle a short distance below the gage; practically permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 15.8 feet at 9 p. m. March 5 (discharge, 105,000 second-feet); minimum, 1.9 feet from 5 p. m. August 26 to 3 p. m. August 28 (discharge, 1,220 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 800 and 150,000 second-feet. Gage read to tenths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

The following discharge measurement was made by J. M. Snavely: No. 67, July 18: Gage height, 2.09 feet; discharge, 1,540 second-feet.

Daily Mean Gage Height, in feet, of North Branch Susquehanna River at Danville, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.4	2.5	2.4	3.85	4.2	3.4	5.95	5.15	3.5	2.4	3.05	2.4
2	2.4	2.4	2.4	4.95	3.95	3.4	5.6	6.0	3.4	2.4	2.8	2.3
3	2.35	2.4	2.4	7.3	4.15	3.8	5.45	5.65	3.25	2.4	2.7	2.2
4	2.3	2.4	2.4	7.7	4.4	5.2	5.2	5.2	3.3	2.4	2.7	2.2
5	2.3	2.4	2.45	6.6	4.45	11.6	5.2	4.85	3.15	2.5	2.7	2.2
6	2.3	2.4	2.7	5.8	4.8	14.25	7.75	4.45	3.1	2.5	2.7	2.2
7	2.2	2.3	3.0	5.1	5.05	11.4	13.2	4.25	3.35	2.4	2.6	2.2
8	2.3	2.3	2.9	4.65	4.55	9.4	12.75	4.05	3.4	2.4	2.5	2.25
9	2.4	2.3	2.9	4.15	4.4	7.9	11.2	4.7	3.75	2.5	2.4	2.45
10	2.55	2.3	2.8	4.0	4.3	7.25	9.55	5.9	4.05	2.5	2.35	2.5
11	2.6	2.4	2.8	3.85	4.25	6.65	8.55	6.5	4.35	2.4	2.3	2.6
12	2.45	2.4	3.15	3.75	4.0	6.6	7.6	7.3	4.45	2.4	2.3	2.5
13	2.5	2.4	3.05	3.85	4.05	7.25	6.9	8.05	4.15	2.25	2.3	2.4
14	2.6	2.5	2.85	3.6	4.0	9.0	6.4	8.5	3.85	2.3	2.35	2.4
15	2.75	2.5	2.7	3.1	3.85	8.8	6.05	8.15	3.7	2.25	2.2	2.4
16	2.7	2.5	2.6	2.9	4.2	8.1	5.75	7.2	3.55	2.2	2.2	2.4
17	2.7	2.5	2.55	2.9	3.9	10.4	5.4	6.85	3.35	2.1	2.1	2.3
18	2.6	2.4	2.5	3.05	3.4	13.1	5.05	7.7	3.25	2.1	2.1	2.2
19	2.5	2.4	3.85	2.95	3.55	12.65	4.85	7.75	3.1	2.1	2.1	2.2
20	2.4	2.4	3.6	3.0	3.35	12.2	4.65	6.85	3.05	2.1	2.1	2.2
21	2.4	2.5	3.5	3.55	3.4	11.1	4.55	6.3	2.95	2.0	2.0	2.4
22	2.4	2.5	3.3	4.35	3.65	9.6	4.4	5.95	2.85	2.0	2.0	-------
23	2.4	2.5	3.35	4.7	3.65	9.8	4.2	6.05	2.7	2.1	2.0	-------
24	2.4	2.45	3.3	5.05	3.55	11.8	4.1	5.75	2.7	2.1	2.0	-------
25	2.4	2.4	3.4	5.35	3.4	13.5	4.0	5.25	2.6	2.0	2.0	-------
26	2.4	2.4	3.4	5.9	3.4	12.9	4.0	4.85	2.6	2.0	1.95	-------
27	2.35	2.5	3.4	5.55	3.45	11.25	3.9	4.55	2.5	2.05	1.9	-------
28	2.3	2.5	3.45	5.1	3.5	9.9	3.8	4.25	2.5	3.85	1.9	3.05
29	2.5	2.4	3.6	4.85	-------	8.4	4.55	4.05	2.5	5.8	2.55	3.0
30	2.5	2.4	3.7	4.4	-------	7.3	5.25	3.8	2.5	4.15	2.5	3.0
31	2.5	-------	3.45	4.3	-------	6.55	-------	3.65	-------	3.3	2.5	-------

Note.—Stage-discharge relation Dec. 17 to Jan. 1 affected by ice. Gage height Sept. 22-27 not observed.

Daily discharge, in second-feet, of North Branch Susquehanna River at Danville, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,270	2,530	2,270	5,500	8,780	5,380	17,800	13,600	5,770	2,270	3,980	2,270
2	2,270	2,270	2,270	12,600	7,870	5,380	15,600	17,800	5,380	2,270	3,370	2,030
3	2,150	2,270	2,270	25,500	8,780	7,000	14,600	15,600	4,640	2,270	3,080	1,810
4	2,030	2,270	2,270	28,200	9,730	13,600	13,600	13,600	5,000	2,270	3,080	1,810
5	2,030	2,270	2,400	21,200	9,730	59,900	13,600	11,600	4,640	2,530	3,080	1,810
6	2,030	2,270	3,080	16,700	11,600	86,300	28,900	9,730	4,300	2,530	3,080	1,810
7	1,810	2,030	3,980	13,100	12,600	58,100	75,600	8,780	5,380	2,270	2,800	1,810
8	2,030	2,030	3,670	10,700	10,700	40,800	71,500	7,870	5,380	2,270	2,530	1,920
9	2,270	2,030	3,670	8,780	9,730	29,600	56,300	11,200	7,000	2,530	2,270	2,400
10	2,660	2,030	3,370	7,870	9,250	24,900	42,500	17,200	7,870	2,530	2,150	2,530
11	2,800	2,270	3,370	7,000	8,780	21,200	34,600	20,600	9,730	2,270	2,030	2,800
12	2,400	2,270	4,640	7,000	7,870	21,200	27,500	25,500	9,730	2,270	2,030	2,530
13	2,530	2,270	3,980	7,000	7,870	24,900	23,000	30,300	8,780	1,920	2,030	2,270
14	2,800	2,530	3,520	6,170	7,870	37,700	20,000	33,900	7,000	2,030	2,150	2,270
15	3,220	2,530	3,080	4,300	7,000	36,100	17,800	31,700	6,580	1,920	1,810	2,270
16	3,080	2,530	2,800	3,670	8,780	31,000	16,700	24,900	6,170	1,810	1,810	2,270
17	3,080	2,530	2,400	3,670	7,430	49,200	14,600	22,400	5,380	1,600	1,600	2,030
18	2,800	2,270	2,200	3,980	5,380	74,600	12,600	28,200	4,640	1,600	1,600	1,810
19	2,530	2,270	1,900	3,820	6,170	69,400	11,600	28,900	4,300	1,600	1,600	1,810
20	2,270	2,270	1,800	3,980	5,380	65,500	10,700	22,400	3,980	1,600	1,600	1,810
21	2,270	2,530	1,800	2,660	5,380	55,400	10,700	19,400	3,820	1,400	1,400	2,270
22	2,270	2,530	1,900	9,730	6,170	42,500	9,730	17,800	3,520	1,400	1,400	2,200
23	2,270	2,530	2,000	11,200	6,170	44,100	8,780	17,800	3,080	1,600	1,400	2,400
24	2,270	2,400	2,000	12,600	6,170	61,700	8,320	16,700	3,080	1,600	1,400	2,800
25	2,270	2,270	2,200	14,600	5,380	78,700	7,870	13,600	2,800	1,400	1,400	2,600
26	2,270	2,270	2,600	17,200	5,380	72,500	7,870	11,600	2,800	1,400	1,310	4,200
27	2,150	2,530	2,600	15,600	5,380	56,300	7,430	10,700	2,530	1,500	1,220	4,200
28	2,030	2,530	2,800	13,100	5,770	45,000	7,000	8,780	2,530	7,000	1,220	3,980
29	2,530	2,270	3,000	11,600	-------	33,200	10,700	7,870	2,530	16,700	2,660	3,980
30	2,530	2,270	3,600	9,730	-------	25,500	13,600	7,000	2,530	8,780	2,530	3,980
31	2,530	-------	4,000	9,250	-------	21,200	-------	6,170	-------	5,000	2,530	-------

Note.—Discharge Dec. 17 to Jan. 1 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for North Branch Suquehanna River at Wilkes-Barre and Susquehanna River at Harrisburg. Discharge Sept. 22-27 estimated, because of no gage height record, from discharge of North Branch Susquehanna River at Wilkes-Barre.

Monthly discharge of North Branch Susquehanna River at Danville, for the year ending September 30, 1923.
(Drainage area, 11,200 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	3,220	1,810	2,400	0.214	0.25
November	2,530	2,030	2,330	.208	.23
December	4,640	1,800	2,820	.252	.29
January	28,200	2,660	10,600	.946	1.09
February	12,600	5,380	7,750	.692	.72
March	86,300	5,380	41,900	3.74	4.31
April	75,600	7,000	21,000	1.88	2.10
May	33,900	6,170	17,200	1.54	1.78
June	9,730	2,530	5,030	.449	.50
July	16,700	1,400	2,910	.260	.30
August	3,980	1,220	2,130	.190	.22
September	4,200	1,810	2,490	.222	.25
The Year	86,300	1,220	9,920	.886	12.04

SUSQUEHANNA BASIN—STATION NO. 12

WEST BRANCH SUSQUEHANNA RIVER AT BOWER

Location.—At single-span steel highway bridge, about four miles northeast of Mahaffey, near railroad station at Bower, Clearfield County.

Drainage Area.—320 square miles.

Records Available.—October 2, 1913, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by Leslie G. Bell. Elevation of gage zero 1,207.22 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank is low and subject to overflow at extremely high stages; left is high and not subject to overflow. Bed is composed of gravel. Control is at a riffle about 200 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 11.2 feet at 3 a. m. May 13 (discharge, about 6,850 second-feet); minimum, 3.70 feet from October 1 to 7 (discharge, 25 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 20 and 4,000 second-feet. Gage read to half tenths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for high stages when they are fair.

The following discharge measurement was made by H. J. McIntyre: No. 30, July 13: Gage height, 4.60 feet; discharge, 124 second-feet.

Daily Mean Gage Height, in feet, of West Branch Susquehanna River at Bower, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.70	3.95	4.00	6.67	6.31	7.70	5.35	5.92	4.87	4.17	6.80	4.88
2	3.70	3.95	4.08	6.82	7.83	7.90	5.38	5.90	4.80	4.15	5.42	4.55
3	3.70	3.95	4.12	6.32	7.80	8.80	5.25	5.50	4.87	4.13	5.18	4.25
4	3.70	3.95	4.18	5.85	7.45	8.85	5.25	5.32	4.85	4.65	5.50	4.18
5	3.70	3.95	5.33	5.55	7.15	8.30	5.60	5.26	4.81	4.90	6.20	5.38
6	3.70	3.96	5.15	5.25	6.95	7.35	6.00	5.22	4.73	5.20	6.40	5.75
7	3.70	4.05	4.80	5.12	6.75	6.60	5.85	5.12	4.67	5.40	5.95	4.65
8	3.80	4.12	4.82	5.10	6.38	6.25	5.65	5.28	4.77	5.20	5.48	4.55
9	3.88	4.10	4.95	5.15	5.90	5.95	5.50	5.38	4.75	4.90	5.15	4.49
10	4.12	4.02	4.78	5.18	5.60	6.35	5.34	5.65	4.73	4.80	4.95	4.44
11	4.32	3.96	4.68	5.40	5 62	7.22	5.22	6.05	4.67	4.64	4.75	4.41
12	4.20	3.98	4.60	5.20	5.90	7.79	5.12	8.92	4.57	4.53	4.69	4.48
13	4.02	3.95	4.48	5.32	6.55	9.16	5.02	10.55	4.47	4.45	4.62	4.52
14	4.00	3.96	4.45	5.74	7.40	7.70	5.20	8.55	4.41	4.42	4.56	4.45
15	3.95	4.10	4.50	6.74	7.35	7.25	5.22	7.30	4.40	4.32	4.51	4.41
16	3.90	4.40	4.52	6.98	7.05	7.05	5.40	7.40	4.35	4.38	4.49	4.40
17	3.92	4.30	4.58	6.41	6.98	6.65	5.78	7.10	4.35	4.38	4.42	4.39
18	3.98	4.10	4.75	5.95	7.05	6.30	6.02	6.60	4.35	4.25	4.38	4.38
19	3.95	4.10	4.75	6.20	7.25	6.18	5.92	6.30	4.35	4.12	4.28	4.38
20	3.95	4.10	4.72	6.50	7.05	5.92	5.68	6.05	4.35	4.02	4.21	4.75
21	3.95	4.02	4.65	7.93	7.00	5.78	5.52	7.08	4.30	3.92	4.18	4.90
22	3.95	4.00	4.60	9.20	6.80	5.82	5.48	6.98	4.25	3.90	4.48	4.55
23	3.95	4.00	4.60	6.90	6.55	6.42	5.39	6.78	4.15	3.98	4.38	4.42
24	4.32	4.00	4.60	6.42	6.50	7.20	5.32	6.22	4.30	4.02	4.28	4.39
25	4.18	4.00	4.60	5.92	6.38	6.90	5.25	5.93	4.80	4.19	4.22	4.35
26	4.02	4.00	4.72	5.85	6.25	6.25	5.18	5.73	4.91	4.09	4.18	4.30
27	4.00	4.02	4.70	5.88	7.00	6.12	5.11	5.60	4.67	3.96	4.08	4.30
28	3.92	4.00	6.00	5.88	7.40	5.92	5.35	5.47	4.47	6.28	4.68	4.30
29	3.90	4.05	6.82	5.79	-------	5.65	6.67	5.30	4.37	6.40	6.00	4.30
30	3.90	4.10	5.85	5.58	-------	5.60	6.15	5.17	4.27	5.48	5.80	4.28
31	3.92	-------	5.66	5.56	-------	5.45	-------	5.00	-------	7.08	5.20	-------

Note.--Stage-discharge relation Dec. 14-27, Jan. 21, 22 and Feb. 14 to Mar. 2 affected by ice.

Daily discharge, in second-feet, of West Branch Susquehanna River at Bower, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25	42	46	1,180	865	800	335	610	178	62	1,260	190
2	25	42	53	1,260	2,280	950	355	610	165	60	355	118
3	25	42	57	865	2,280	3,520	298	400	178	58	280	72
4	25	42	63	580	1,840	3,520	298	315	178	135	400	63
5	25	42	335	422	1,640	2,880	445	298	165	190	795	355
6	25	43	265	298	1,450	1,840	670	280	155	280	935	522
7	25	50	165	250	1,260	1,090	580	250	135	355	640	135
8	31	57	165	250	935	830	470	315	155	280	400	118
9	37	55	205	265	610	640	400	355	155	190	265	168
10	57	48	165	280	445	900	335	470	155	165	205	101
11	83	43	145	355	445	1,640	280	700	135	135	155	96
12	65	44	125	280	610	2,280	250	3,650	118	118	145	107
13	48	42	107	315	1,090	4,040	220	6,060	106	102	125	110
14	46	43	90	522	1,300	2,170	280	3,260	96	98	118	102
15	42	55	80	1,180	1,300	1,640	280	1,740	95	83	110	96
16	38	95	70	1,450	850	1,450	355	1,840	88	92	108	95
17	40	80	70	935	650	1,090	550	1,540	88	92	98	94
18	44	55	70	640	550	865	670	1,090	88	72	92	92
19	42	55	70	795	500	795	610	865	88	57	77	92
20	42	55	70	1,010	480	610	495	700	88	48	66	155
21	42	48	75	1,400	440	550	400	1,540	80	40	63	190
22	42	46	75	1,600	420	550	400	1,450	72	38	107	118
23	42	46	75	1,360	420	935	355	1,260	60	44	92	98
24	83	46	80	935	420	1,640	315	795	80	48	77	94
25	63	46	90	610	500	1,360	298	640	165	57	68	88
26	48	46	100	580	650	830	280	522	190	48	63	80
27	46	48	120	610	850	730	250	445	135	43	53	80
28	40	46	670	610	850	610	335	378	106	865	145	80
29	38	50	1,260	550	-------	470	1,180	315	90	935	670	80
30	38	55	580	445	-------	445	762	265	76	400	550	77
31	40	-------	470	422	-------	378	-------	220	-------	1,540	280	-------

Note.—Discharge Dec. 14-27, Jan. 21, 22 and Feb. 14 to Mar. 2 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Clearfield Creek at Dimeling, Little Juniata River at Tyrone and Frankstown Branch Juniata River at Williamsburg.

Monthly discharge of West Branch Susquehanna River at Bower, for the year ending September 30, 1923.
(Drainage area, 320 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	83	25	42.3	0.132	0.15
November	95	42	50.2	.157	.18
December	1,260	46	194	.606	.79
January	1,600	250	718	2.24	2.58
February	2,280	420	926	2.89	3.01
March	4,040	378	1,360	4.25	4.90
April	1,180	220	425	1.33	1.48
May	6,060	220	1,070	3.34	3.85
June	190	60	122	.381	.43
July	1,540	38	217	.678	.78
August	1,260	53	284	.888	1.02
September	522	63	127	.397	.44
The Year	6,060	25	460	1.44	19.52

SUSQUEHANNA BASIN--STATION NO. 13

WEST BRANCH SUSQUEHANNA RIVER AT CLEARFIELD

Location.—At two-span steel highway bridge, Market Street, Clearfield, Clearfield County.

Drainage Area.—487 square miles.

Records Available.—December 1, 1904, to August 31, 1923, when the station was discontinued.

Gage.—Standard chain attached to downstream side of bridge; read to half tenths twice daily by H. P. Bridge; during high stages more frequently. Elevation of gage zero 1,093.30 feet, United States Geological Survey datum.

Channel and Control.—Both banks are high and not subject to overflow. Control is a low dam about 2,000 feet below gage.

Extremes of Stage.—Maximum gage height during the period October 1 to August 31, estimated from hydrograph, 7.3 feet at 4 a. m. May 13; minimum,—0.30 foot at 7.30 a. m. June 25.

Ice.—Stage-discharge relation usually affected by ice.

Gage heights obtained at this station are for Flood Warning purposes.

Daily Mean Gage Height, in feet, of West Branch Susquehanna River at Clearfield, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.75	1.85	1.90	3.45	2.85	2.90	0.45	1.45	0.38	1.30	2.95	-------
2	.78	1.85	1.90	4.15	3.25	2.55	.70	1.25	.30	1.40	2.40	-------
3	1.11	1.85	1.90	3.65	4.60	3.62	.60	1.01	.35	1.30	2.00	-------
4	1.16	1.85	1.90	3.35	4.80	5.53	.60	.88	.38	1.50	1.70	-------
5	1.22	1.85	2.35	3.05	3.80	5.00	.90	.78	.28	1.50	2.09	-------
6	1.35	1.85	2.80	2.95	3.00	3.25	1.28	.68	.20	1.45	2.70	-------
7	1.55	1.90	2.50	2.65	2.70	2.55	1.15	.58	.24	1.45	2.95	-------
8	1.62	1.90	2.55	2.50	2.75	1.90	.98	.50	.45	1.40	2.40	-------
9	1.70	1.92	2.65	2.50	2.85	1.50	.90	.70	.45	1.40	2.05	-------
10	1.92	2.00	2.45	2.62	2.50	1.67	1.00	1.20	.25	1.30	1.70	-------
11	2.10	2.00	2.30	2.70	2.25	2.72	.95	1.10	.08	1.25	1.25	-------
12	2.10	1.99	2.15	2.65	2.05	2.85	.70	3.93	.00	1.70	1.10	-------
13	2.10	1.92	1.80	2.60	2.16	3.99	.48	6.70	.00	2.20	1.00	-------
14	2.05	1.90	1.90	2.55	4.01	3.15	.40	4.20	.00	1.60	1.00	-------
15	1.88	1.90	2.00	2.67	2.95	2.40	.60	2.90	—.02	1.35	.95	-------
16	1.80	1.90	2.00	3.54	2.35	2.20	.65	2.40	—.10	1.18	.75	-------
17	1.80	1.92	2.00	3.10	2.15	2.40	.90	2.85	—.10	1.10	.58	-------
18	1.80	2.05	2.00	2.85	1.95	1.95	1.18	2.10	—.10	1.10	.50	-------
19	1.80	2.08	2.05	3.30	1.80	1.75	1.11	1.70	—.16	1.05	.47	-------
20	1.80	2.00	2.20	3.30	1.80	1.50	.98	1.50	—.20	.80	.44	-------
21	1.80	2.00	2.10	3.62	1.80	1.25	.88	2.65	—.20	.50	.40	-------
22	1.80	2.00	2.00	5.00	1.70	1.25	.78	2.65	—.20	.60	.60	-------
23	1.80	1.96	2.00	4.55	1.65	1.82	.68	2.00	—.20	.50	.55	-------
24	1.92	1.90	2.00	4.00	1.50	2.45	.60	1.65	—.22	.50	.64	-------
25	1.95	1.90	2.00	3.65	1.50	2.10	.58	1.45	—.15	.50	.48	-------
26	1.98	1.85	2.10	3.45	1.50	1.85	.48	1.18	.65	.70	.32	-------
27	1.98	1.85	2.10	3.25	1.80	1.60	.38	.95	1.75	1.10	.15	-------
28	1.95	1.85	2.45	3.10	2.80	1.30	.42	.78	1.45	2.15	.75	-------
29	1.90	1.90	3.38	3.15	-------	1.08	1.92	.68	1.20	3.17	1.76	-------
30	1.90	1.90	2.95	3.25	-------	.90	1.80	.58	1.20	2.55	2.15	-------
31	1.90	-------	2.9	2.95	-------	.55	-------	.48	-------	2.85	1.10	-------

NOTE.—Gage heights affected by changes at dam, about 2,000 feet downstream from station, which caused variations in backwater at gage ranging from one to two feet above previous years. Stage-discharge relation Dec. 17 to Mar. 3 affected by ice. Station was discontinued on Aug. 31, 1923.

SUSQUEHANNA BASIN—STATION NO. 14

CLEARFIELD CREEK AT DIMELING

Location.—At single-span steel highway bridge, Dimeling, Clearfield County, about 400 feet downstream from the mouth of Little Clearfield Creek.

Drainage Area.—370 square miles.

Records Available.—October 2, 1913, to September 30, 1923.

Gage.—Standard chain attached to upstream side of bridge; read by John Olson. Elevation of gage zero 1,145.56 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Left bank is high and not subject to overflow; right is low and is overflowed at extremely high stages. Bed at control riffle, about 250 feet below gage, is composed of coarse gravel and boulders; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 10.68 feet observed at 7 a. m. May 13 (discharge, 7,140 second-feet); minimum, 3.27 feet at 4 p. m. October 7 (discharge, 12 second-feet).

Ice.—Stage-discharge relation seriously affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 1,000 second-feet; fairly well defined between 1,000 and 3,000 second-feet and well defined from 3,000 to 11,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for intermediate stages when they are fair.

The following discharge measurement was made by J. M. Snavely: No. 31, July 13: Gage height, 4.48 feet; discharge, 195 second-feet.

Daily Mean Gage Height, in feet, of Clearfield Creek at Dimeling, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.29	3.42	3.35	5.26	4.81	5.86	4.72	5.96	4.48	3.88	5.12	3.86
2	3.31	3.48	3.62	6.74	5.35	5.44	4.83	5.58	4.49	3.74	4.59	3.86
3	3.39	3.52	3.62	5.60	7.43	7.41	4.80	5.35	4.52	3.92	4.38	3.78
4	3.29	3.48	3.52	5.09	7.45	10.64	4.85	5.16	-------	4.94	4.22	3.79
5	3.33	3.50	3.92	4.80	6.40	9.63	5.08	5.02	-------	4.83	4.38	3.91
6	3.30	3.52	3.98	4.58	5.95	7.96	5.64	4.92	-------	4.48	4.84	4.29
7	3.28	3.72	4.04	4.34	5.66	6.95	5.62	4.79	-------	4.35	5.64	4.13
8	3.52	3.77	4.21	4.34	5.46	6.32	5.30	4.88	4.85	4.24	4.92	4.40
9	3.54	3.69	4.24	4.44	5.36	5.88	5.02	5.15	4.68	4.02	4.62	4.32
10	3.80	3.64	4.22	4.52	5.24	5.84	5.08	5.42	4.54	3.91	4.42	4.61
11	3.77	3.54	4.12	4.68	5.00	6.87	4.88	5.38	4.36	3.91	4.29	4.28
12	3.78	3.49	3.86	4.62	4.78	7.15	4.78	7.81	4.22	4.00	4.20	4.08
13	3.69	3.46	3.48	4.71	5.10	8.28	4.68	10.29	4.08	4.38	4.10	3.98
14	3.68	3.51	3.65	5.06	6.38	7.46	4.72	8.25	3.86	4.04	4.15	3.98
15	3.57	3.58	3.68	5.85	5.95	6.70	5.04	7.10	3.72	3.84	3.98	3.78
16	3.43	3.62	3.88	7.78	5.38	6.64	4.98	6.96	4.08	3.81	3.80	3.78
17	3.46	3.60	4.02	7.78	5.22	6.44	5.50	7.10	3.96	3.86	3.81	3.77
18	3.48	3.52	3.88	7.68	5.12	6.15	5.80	6.35	3.90	3.72	3.84	3.78
19	3.47	3.51	3.89	7.52	4.98	6.00	5.75	6.01	3.81	3.68	3.82	3.79
20	3.46	3.52	3.88	7.38	5.02	5.82	5.98	5.84	3.92	3.64	3.88	3.80
21	3.42	3.53	3.91	7.53	4.80	5.66	5.62	7.30	4.08	3.58	3.79	3.82
22	3.41	3.52	3.92	6.84	4.66	5.45	5.35	6.98	4.01	3.52	4.00	3.86
23	3.46	3.56	3.97	6.72	4.72	6.30	5.19	6.35	3.99	3.49	3.88	3.79
24	3.58	3.62	4.01	5.90	6.10	6.81	5.08	6.05	3.91	3.51	3.72	3.69
25	3.72	3.52	4.06	5.54	5.98	6.26	4.94	5.68	3.98	3.66	3.79	3.80
26	3.84	3.52	4.08	5.46	5.92	5.98	4.79	5.46	3.95	3.61	3.68	3.82
27	3.68	3.37	4.12	5.38	5.62	5.78	4.68	5.26	4.05	3.69	3.45	3.74
28	3.58	3.29	4.60	5.24	5.80	5.58	4.92	5.04	3.96	4.88	4.20	3.64
29	3.55	3.31	6.02	5.16	-------	5.26	6.86	4.93	3.98	5.78	4.61	3.54
30	3.51	3.36	5.15	4.88	-------	5.19	6.32	4.70	3.84	5.33	4.26	3.49
31	3.44	-------	5.09	4.69	-------	5.06	-------	4.62	-------	4.83	4.00	-------

NOTE.—Stage-discharge relation Jan. 16-22 and Feb. 23-26 affected by ice. Gage height June 4-7 unsatisfactory.

Daily discharge, in second-feet, of Clearfield Creek at Dimeling, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14	27	20	492	320	820	285	882	220	88	430	85
2	16	34	51	1,420	540	592	338	675	220	67	250	85
3	24	38	51	675	2,100	2,100	320	540	220	95	195	72
4	14	34	38	430	2,100	6,940	338	450	215	372	150	74
5	18	36	95	320	1,180	5,100	430	390	210	338	195	93
6	15	38	105	250	88	2,800	702	355	470	220	338	172
7	15	64	119	184	705	1,700	675	320	620	184	702	140
8	38	77	150	184	590	1,120	515	355	338	161	355	195
9	40	60	167	208	540	850	390	450	285	109	250	172
10	75	53	150	220	492	820	430	565	235	93	195	250
11	71	41	129	285	390	1,600	355	565	184	93	172	172
12	72	35	85	250	320	1,900	320	2,560	150	109	150	129
13	60	32	34	285	430	3,180	285	6,360	129	195	129	105
14	58	37	54	410	1,180	2,220	285	3,040	85	119	140	105
15	44	46	58	820	882	1,420	410	1,800	64	81	105	72
16	28	51	88	1,500	565	1,340	390	1,700	129	77	75	72
17	32	48	109	1,100	470	1,180	620	1,800	102	85	77	71
18	34	38	88	500	430	1,040	790	1,180	91	64	81	72
19	33	37	89	500	390	915	760	915	77	58	78	74
20	32	38	88	600	390	790	915	820	95	53	88	75
21	27	40	93	1,000	320	702	675	2,000	129	46	74	78
22	26	38	95	1,400	268	592	540	1,700	109	38	109	85
23	32	43	104	1,420	220	1,120	470	1,180	107	35	88	74
24	46	51	109	850	220	1,520	430	915	93	37	64	60
25	64	51	119	648	240	1,120	372	730	105	56	74	75
26	81	38	129	592	400	915	320	592	100	49	58	78
27	58	22	129	565	675	790	285	492	119	60	30	67
28	46	14	250	492	790	675	355	410	102	355	150	53
29	42	16	915	450	-------	492	1,600	372	105	790	250	41
30	37	21	450	355	-------	470	1,120	285	81	540	161	35
31	29	-------	430	285	-------	410	-------	250	-------	338	109	-------

NOTE.—Discharge Jan. 16-22 and Feb. 23-26 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for West Branch Susquehanna River at Bower, Little Juniata River at Tyrone and Frankstown Branch Juniata River at Williamsburg. Discharge June 4-7 estimated, because of unsatisfactory gage height record, from discharge of Raystown Branch Juniata River at Saxton.

Monthly discharge of Clearfield Creek at Dimeling, for the year ending September 30, 1923.
(Drainage area, 370 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	75	13	39.4	0.106	0.12
November	71	14	39.7	.107	.12
December	915	20	148	.400	.46
January	1,500	184	603	1.63	1.88
February	2,100	220	644	1.74	1.81
March	6,940	410	1,520	4.11	4.74
April	1,600	285	524	1.42	1.58
May	6,360	250	1,120	3.03	3.49
June	620	64	173	.468	.52
July	790	35	161	.435	.50
August	702	30	172	.466	.54
September	250	35	97.7	.264	.29
The Year	6,940	13	438	1.18	16.05

SUSQUEHANNA BASIN—STATION NO. 15

DRIFTWOOD BRANCH SINNEMAHONING CREEK AT STERLING RUN.

Location.—At three-span steel highway bridge, Sterling Run, Cameron County about 300 feet upstream from mouth of Sterling Run.

Drainage Area.—270 square miles.

Records Available.—September 30, 1913, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by C. U. Lupro. Elevation of gage zero 894.60 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are low and subject to overflow during extremely high stages. Bed is composed of gravel. The control for low stages is at the first of a series of gravel riffles extending from 50 to 100 feet below the gage; probably permanent. The control for medium and high stages, which was at the first of a series of riffles extending from 300 to 500 feet below the gage, was changed on November 2, 1921, when a portion of the gravel bar, deposited by flow from Sterling Run on September 10, 1921, was washed out.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 7.0 feet at 11 a. m. May 21 (discharge, 10,800 second-feet); minimum, 0.49 foot at 3 p. m. July 23 and August 27 (discharge, 20 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined between 20 and 10,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Discharge measurements of Driftwood Branch Sinnemahoning Creeek at Sterling Run, during the year ending September 30, 1923.

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.ft.
44	July 14a	H. J. McIntyre	.66	33.5
45	14a	do	.65	30.8

a Measurement made by wading 500 feet below gage.

Daily Mean Gage Height, in feet, of Driftwood Branch Sinnemahoning Creek at Sterling Run, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.58	0.73	0.81	2.80	1.44	1.74	1.52	1.40	1.23	0.71	0.66	0.58
2	.58	.72	.85	3.10	1.54	1.58	1.44	1.32	1.15	.69	.65	.55
3	.58	.74	1.00	2.19	2.07	2.56	1.45	1.29	1.17	.65	.65	.54
4	.58	.78	.90	2.00	2.32	4.65	1.57	1.26	1.17	.65	.64	.54
5	.58	.74	1.44	1.78	2.12	5.40	2.38	1.28	1.09	.65	.66	.58
6	.58	.74	1.52	1.56	1.97	3.76	3.27	1.24	1.01	.66	.66	.84
7	.58	.79	1.55	1.60	1.96	3.02	2.84	1.22	.98	.65	.68	.72
8	.62	.81	1.52	1.69	1.83	2.51	2.48	1.23	1.11	.65	.76	.80
9	.77	.80	1.60	1.59	1.74	2.16	2.16	1.46	1.07	.63	.68	.90
10	.88	.80	1.50	1.50	1.66	2.07	1.98	1.56	.97	.59	.64	.74
11	1.30	.80	1.36	1.40	1.46	2.49	1.83	1.56	.93	.69	.59	.66
12	.94	.79	1.36	1.32	1.39	3.04	1.73	3.65	.89	1.07	.62	.62
13	.82	.78	1.26	1.27	1.54	3.33	1.64	4.82	.87	.77	.55	.60
14	.76	.77	1.18	1.20	2.04	3.26	1.56	3.38	.85	.68	.56	.60
15	.72	.84	1.18	1.32	1.78	2.58	1.50	2.74	.85	.64	.54	.60
16	.70	1.12	1.18	1.64	1.63	2.70	1.49	2.78	.82	.62	.52	.58
17	.72	1.00	1.20	1.60	1.72	3.14	1.43	2.78	.79	.62	.51	.57
18	.78	.95	1.21	1.66	1.48	2.82	1.36	2.54	.76	.60	.51	.53
19	.74	.91	1.18	1.68	1.58	2.73	1.34	2.24	.72	.59	.50	.56
20	.70	.88	1.16	1.71	1.56	2.46	1.29	2.23	.71	.54	.52	.60
21	.70	.87	1.14	2.09	1.54	2.20	1.24	5.73	.70	.53	.51	.90
22	.70	.83	1.17	2.72	1.47	2.14	1.20	3.97	.70	.53	.56	.97
23	.70	.85	1.20	2.52	1.57	2.92	1.24	2.91	.69	.50	.56	.82
24	1.14	.82	1.23	2.52	1.26	3.32	1.18	2.37	.67	.50	.56	1.04
25	.97	.85	1.20	2.03	1.49	2.70	1.14	2.11	.66	.51	.52	.81
26	.92	.83	1.20	1.86	1.44	2.36	1.10	1.77	.67	.50	.52	.72
27	.94	.89	1.26	1.66	1.50	2.12	1.10	1.63	.95	.51	.50	.68
28	.87	.86	2.00	1.62	1.64	1.96	1.11	1.57	.77	.59	.60	.66
29	.81	.86	2.89	1.52	-------	1.88	1.44	1.47	.77	.76	.66	.65
30	.78	.82	2.50	1.48	-------	1.76	1.40	1.37	.77	.68	.65	.63
31	.76	-------	2.46	1.40	-------	1.62	-------	1.27	-------	.66	.60	-------

NOTE.—Stage-discharge relation Dec. 6-8, Jan. 7-12 and 15-20 affected by ice.

Daily discharge, in second-feet, of Driftwood Branch Sinnemahoning Creek at Sterling Run, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	22	30	38	1,650	230	408	271	210	136	28	25	22
2	22	29	44	2,140	282	304	230	170	110	27	25	22
3	22	31	70	835	680	1,280	235	158	116	25	25	21
4	22	35	52	630	950	5,100	298	146	116	25	25	21
5	22	31	230	436	730	6,910	1,070	153	92	25	25	22
6	22	31	130	293	603	3,450	2,500	139	72	25	25	43
7	22	36	120	280	594	1,960	1,720	132	66	25	26	29
8	24	38	160	240	477	1,210	1,210	136	98	25	33	37
9	34	37	315	220	408	782	782	240	88	24	26	52
10	49	37	260	200	354	680	612	293	65	23	25	31
11	160	37	190	170	240	1,210	477	293	57	27	23	25
12	59	36	190	150	205	1,960	401	3,070	50	88	24	24
13	40	35	146	150	282	3,450	341	5,540	48	34	22	23
14	33	34	119	125	680	2,500	293	2,690	44	26	22	23
15	29	43	119	130	436	1,350	260	1,580	44	25	21	23
16	27	101	119	140	334	1,500	255	1,650	40	24	21	22
17	29	70	125	160	394	2,140	225	1,650	36	24	20	22
18	35	61	128	180	250	1,650	190	1,280	33	23	20	21
19	31	54	119	240	304	1,580	180	892	29	23	20	22
20	27	49	113	340	293	1,140	156	892	28	21	21	23
21	27	48	107	730	282	835	139	7,600	27	21	20	52
22	27	42	116	1,500	245	782	125	3,850	27	21	22	65
23	27	44	125	1,210	298	1,800	139	1,800	27	20	22	40
24	107	40	136	1,210	146	2,500	119	1,010	26	20	22	80
25	65	44	125	680	255	1,500	107	730	25	20	21	38
26	56	42	125	504	230	1,010	95	429	26	20	21	29
27	59	50	146	354	260	730	95	334	61	20	20	26
28	48	46	630	328	341	594	98	298	34	23	23	25
29	38	46	1,800	271	-------	477	230	245	34	33	25	25
30	35	40	1,210	250	-------	422	210	195	34	26	25	24
31	33	-------	1,140	210	-------	328	-------	150	-------	25	23	-------

NOTE.—Discharge Dec. 6-8, Jan. 7-12 and 15-20 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Allegheny River near Larabes.

Monthly discharge of Driftwood Branch Sinnemahoning Creek at Sterling Run, for the year ending September 30, 1923.

(Drainage area, 270 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	160	22	40.4	0.150	0.17
November	101	29	43.2	.160	.18
December	1,800	38	272	1.01	1.16
January	2,140	130	515	1.91	2.20
February	950	146	385	1.43	1.49
March	6,910	304	1,660	6.15	7.09
April	2,500	95	435	1.61	1.80
May	7,600	132	1,220	4.52	5.21
June	136	25	56.3	.209	.23
July	88	20	26.3	.097	.11
August	33	20	23.2	.086	.10
September	80	21	31.1	.115	.13
The Year	7,600	20	396	1.47	19.87

SUSQUEHANNA BASIN—STATION NO. 16

DRIFTWOOD BRANCH SINNEMAHONING CREEK AT DRIFTWOOD

Location.—At two-span steel highway bridge, Driftwood, Cameron County, about 1,000 feet above confluence of Driftwood Branch with Bennett Branch.

Drainage Area.—316 square miles.

Records Available.—July 1, 1895, to February 28, 1903, and July 22, 1918, to August 31, 1923, when the station was discontinued.

Gage.—Standard chain attached to downstream side of bridge; read to quarter tenths twice daily by H. B. Mutthersbough; during high stages more freqently. Elevation of gage zero 791.30 feet, United States Geological Survey datum.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and rock. Stage-discharge relation affected by backwater from Bennett Branch Sinnemahoning Creek at medium and high stages.

Extremes of Stage.—Maximum gage height during the period October 1 to August 31, estimated from hydrograph, 8.7 feet at 2 a. m. March 5; minimum, 0.0 foot several times in July and August.

Ice.—Stage-discharge relation usually affected by ice.

Gage heights obtained at this station are for Flood Warning purposes.

Daily Mean Gage Height, in feet, of Driftwood Branch Sinnemahoning Creek at Driftwood, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.10	0.35	0.38	1.75	1.12	1.70	1.37	1.83	1.79	0.67	0.30	-------
2	.10	.38	1.07	2.82	1.08	2.08	1.24	1.76	1.63	.61	.28	-------
3	.09	.50	1.00	2.50	2.15	2.73	1.17	1.65	1.53	.54	.25	-------
4	.08	.46	.88	2.38	2.38	5.88	1.45	1.57	1.55	.47	.40	-------
5	.05	.42	.78	2.15	2.30	6.99	2.54	1.47	1.60	.43	.35	-------
6	.05	.50	.70	2.05	2.22	4.72	3.81	1.40	1.27	.35	.21	-------
7	.08	.80	.70	1.90	2.12	3.60	3.27	1.23	.99	.27	.10	-------
8	.30	.72	1.40	1.90	2.02	2.90	3.20	1.10	2.05	.25	.19	-------
9	.40	.66	1.34	2.00	1.92	2.25	2.85	1.20	1.90	.21	.08	-------
10	.55	.57	1.20	1.90	1.82	2.20	2.56	1.31	1.67	.23	.00	-------
11	1.05	.48	1.12	1.78	1.80	2.60	2.22	1.30	1.41	.40	.00	-------
12	1.10	.40	1.05	1.69	1.80	3.01	2.35	4.07	1.27	.85	.08	-------
13	.92	.55	1.00	1.58	1.89	4.67	1.93	6.02	1.19	.79	.12	-------
14	.89	1.32	.95	1.50	1.82	4.37	1.57	3.35	1.09	.74	.02	-------
15	.82	1.24	.92	1.40	1.78	3.97	1.43	2.85	.99	.63	.00	-------
16	.76	1.12	.90	1.40	1.72	3.60	1.45	2.70	.87	.56	.00	-------
17	.70	.99	.90	1.40	1.66	3.41	1.54	2.35	.79	.45	.00	-------
18	.59	.92	.90	1.40	1.62	3.23	1.60	2.20	.74	.30	.00	-------
19	.51	.82	.90	1.40	1.56	3.00	1.69	1.95	.67	.15	.00	-------
20	.42	.78	.90	1.40	1.49	2.74	1.51	4.04	.61	.02	.00	-------
21	.33	.70	.90	2.42	1.42	2.57	1.37	4.30	.54	.00	.10	-------
22	.30	.85	.90	3.00	1.40	2.45	1.27	3.94	.47	.00	.02	-------
23	.35	.78	.90	2.70	1.36	2.65	1.45	3.77	.41	.00	.00	-------
24	.70	.72	.90	2.52	1.32	3.05	1.37	3.00	.36	.00	.00	-------
25	.69	.65	.90	2.05	1.30	2.85	1.27	2.73	.31	.00	.00	-------
26	.62	.60	.90	1.75	1.35	2.40	1.17	2.35	.28	.00	.00	-------
27	.52	.55	.90	1.54	1.50	2.03	1.11	2.10	.75	.00	.00	-------
28	.46	.50	1.63	1.40	1.50	1.87	1.25	1.97	.71	.30	.05	-------
29	.44	.42	2.55	1.35	-------	1.61	1.95	1.91	.83	.45	.20	-------
30	.40	.39	1.90	1.24	-------	1.47	1.91	1.93	.73	.30	.12	-------
31	.38	-------	1.45	1.18	-------	1.37	-------	1.87	-------	.40	.02	-------

Note.—Stage-discharge relation Dec. 13-28 and Jan. 14-21 affected by ice. Station was discontinued on Aug. 31, 1923.

SUSQUEHANNA BASIN—STATION NO. 17

WEST BRANCH SUSQUEHANNA RIVER AT RENOVO

Location.—At three-span steel highway bridge, Eighth Street, Renovo, Clinton County.

Drainage Area.—2,990 square miles.

Records Available.—July 1, 1895, to December 31, 1903, and October 1, 1905, to September 30, 1923.

***Gage.*—Standard** chain attached to upstreams side of bridge; read by J. H. Baird. Elevation of gage zero 634.03 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

***Channel and Control.*—Both banks are high and not subject to overflow. Bed is composed of rocks. Control is at the first of a series of riffles about 1,000 feet below gage; probably permanent.**

Extremes of Discharge.—Maximum stage during the year, 13.06 feet observed at 8 a. m. March 5 (discharge, 65,800 second-feet); minimum, –0.60 foot several times in July (discharge, 230 second-feet).

Ice.—Stage-discharge usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 200 and 2,000 second-feet and fairly well defined from 2,000 to 75,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for medium and high stages when they are fair.

The following discharge measurement was made by J. M. Snavely: No. 48, July 15; Gage height, 0.28 foot; discharge, 740 second-feet.

Daily Mean Gage Height, in feet, of West Branch Susquehanna River at Renovo, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	—0.09	—0.08	—0.08	2.76	1.74	8.65	2.20	3.37	1.75	0.10	0.84	0.08
2	—.09	—.08	—.08	3.78	1.90	8.70	1.98	2.85	1.61	.04	1.28	—.02
3	—.09	—.09	—.07	3.64	2.56	8.95	1.96	2.56	1.47	—.07	.77	—.35
4	—.09	—.09	—.07	3.41	4.68	9.80	2.00	2.48	1.43	—.07	.50	—.54
5	—.09	—.09	—.02	2.71	4.22	11.75	2.91	2.30	1.42	—.08	.36	—.42
6	—.09	—.09	.52	2.10	3.66	8.85	4.60	2.03	1.28	.38	.48	—.32
7	—.09	—.08	.42	1.81	3.21	6.75	4.44	1.85	1.15	.33	.89	.18
8	—.08	—.07	.72	1.61	2.82	5.50	3.94	1.63	1.30	.24	1.47	.57
9	—.07	—.08	.97	1.64	2.64	4.63	3.50	1.91	1.50	.13	.88	.47
10	—.04	—.08	1.07	1.48	2.40	4.09	3.12	2.20	1.33	.02	.55	.83
11	.04	—.07	.78	1.35	2.12	4.47	2.79	2.59	1.14	.10	.29	.70
12	.03	—.07	.43	1.16	1.90	5.25	2.42	4.56	.92	.17	.10	.33
13	.00	—.07	.30	.93	1.75	7.27	2.21	10 83	.81	.2°	.03	.12
14	—.01	—.07	—.07	-------	2.47	6.95	2.05	8.79	.72	.13	.00	—.05
15	—.02	—.07	—.09	-------	3.63	5.77	2.06	6.50	.66	.12	—.01	—.15
16	—.03	—.07	-------	-------	3.43	5.17	2.01	5.71	.53	.05	—.02	—.23
17	—.04	—.06	-------	-------	3.34	6.04	1.91	6.19	.47	—.10	—.02	—.33
18	—.05	—.06	-------	.06	8.02	5.71	1.92	5.44	.39	—.20	—.03	—.35
19	—.05	—.06	-------	1.78	8.42	5.15	2.08	4.64	.28	—.31	—.03	—.37
20	—.05	—.06	-------	1.95	8.25	4.71	1.87	4.09	.17	—.38	—.05	—.36
21	—.06	—.06	-------	2.36	8.18	4.12	1.81	4.89	.09	—.43	—.09	—.24
22	—.06	—.07	-------	3.36	7.99	3.80	1.75	6.59	.00	—.54	—.16	—.19
23	—.06	—.07	-------	3.54	7.56	4.34	1.70	5.54	—.07	—.60	—.22	.05
24	—.06	—.07	-------	3.41	7.12	5.92	1.55	4.59	—.07	—.59	—.28	.26
25	—.02	—.07	-------	3.21	6.75	5.38	1.43	3.96	—.07	—.57	—.36	.28
26	—.02	—.07	-------	2.86	7.48	4.46	1.32	3.46	—.07	—.60	—.44	—.02
27	—.05	—.07	-------	2.46	7.36	3.91	1.21	3.14	—.06	—.50	—.48	—.16
28	—.05	—.07	-------	2.17	7.69	3.54	1.32	2.73	.23	—.19	—.40	—.23
29	—.06	—.07	-------	1.96	-------	2.95	2.45	2.39	.25	.87	.00	—.27
30	—.07	—.07	2.96	1.86	-------	2.62	3.62	2.15	.18	1.84	.40	—.33
31	—.07	-------	2.06	1.75	-------	2.45	-------	1.83	-------	1.02	.50	-------

Note.—Stage-discharge relation Dec. 16-29, Jan. 14-20 and Feb. 17 to Mar. 8 affected by ice. Gage height Dec. 16-29 and Jan. 14-17 not observed.

Daily discharge, in second-feet, of West Branch Susquehanna River at Renovo, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	538	546	546	5,100	2,780	3,200	3,710	6,800	2,950	700	1,520	700
2	538	546	546	8,050	3,130	4,200	3,320	5,100	2,620	655	2,150	594
3	538	538	554	7,400	4,590	14,000	3,320	4,590	2,460	554	1,100	360
4	538	538	554	6,800	11,400	40,900	3,320	4,350	2,300	554	1,110	260
5	538	538	594	4,840	9,450	55,400	5,370	3,910	2,300	546	950	320
6	538	538	1,110	3,510	7,700	33,900	11,000	3,320	2,150	1,000	1,110	378
7	538	546	1,000	2,950	6,220	21,400	10,200	2,950	2,000	950	1,590	800
8	546	554	1,340	2,620	5,100	14,600	8,400	2,620	2,150	850	2,460	1,160
9	554	546	1,660	2,620	4,590	11,000	7,100	3,130	2,400	750	1,590	1,060
10	578	546	1,860	2,460	4,120	9,100	5,930	3,710	2,150	610	1,160	1,520
11	655	554	1,400	2,300	3,510	10,600	5,100	4,590	1,800	700	900	1,340
12	655	554	1,060	2,060	3,130	13,400	4,120	11,000	1,590	750	700	950
13	610	554	900	1,660	2,950	24,400	3,710	47,900	1 460	850	655	700
14	602	554	554	1,400	4,350	22,600	3,320	33,900	1 310	750	610	570
15	594	554	538	1,300	7,400	16,100	3,510	19,600	1,280	700	602	495
16	586	554	460	1,200	6,800	13,400	3,320	15,600	1,100	655	594	430
17	578	562	460	1,100	6,000	17,100	3,130	18,100	1 030	530	594	372
18	570	562	600	1,100	4,800	15,600	3,130	14,200	1,000	460	586	360
19	570	562	600	1,300	4,600	13,400	3,510	11,000	900	384	586	348
20	570	562	550	2,000	4,200	11,400	3,130	9,100	750	342	570	354
21	562	562	550	4,120	4,200	9,100	2,950	12,200	700	315	538	432
22	562	554	550	6,800	3,600	8,050	2,950	20,200	610	260	488	467
23	562	554	500	7,100	3,800	9,800	2,780	14,600	554	230	446	655
24	562	554	550	6,800	3,400	16,600	2,620	11,000	554	235	404	850
25	594	554	550	6,220	2,400	14,200	2,300	8,750	554	245	354	900
26	594	554	600	5,370	2,200	10,600	2,150	7,100	554	230	310	594
27	570	554	600	4,350	2,400	8,400	2,000	5,930	562	280	290	488
28	570	554	600	3,710	3,000	7,100	2,150	4,840	850	467	330	439
29	562	554	700	3,320	-------	5,650	4,120	4,120	850	1,520	610	411
30	554	554	5,650	3,130	-------	4,590	7,400	3,710	800	2,950	1,000	354
31	554	-------	3,510	2,950	-------	4,120	-------	2,950	-------	1,720	1,110	-------

Note.—Discharge Dec. 16-29, Jan. 14-20 and Feb. 17 to Mar. 3 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for West Branch Susquehanna River at Williamsport.

Monthly discharge of West Branch Susquehanna River at Renovo, for the year ending September 30, 1923.

(Drainage area, 2,990 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	655	538	570	0.191	0.22
November	562	538	552	.185	.21
December	5,650	460	1,010	.338	.39
January	8,050	1,100	3,730	1.25	1.44
February	11,400	2,200	4,710	1.58	1.64
March	55,400	3,200	15,000	5.02	5.79
April	11,000	2,000	4,300	1.44	1.61
May	47,900	2,620	10,400	3.48	4.01
June	2,950	554	1,420	.475	.53
July	2,950	230	701	.234	.27
August	2,460	290	881	.295	.34
September	1,520	260	622	.208	.23
The Year	55,400	230	3,660	1.22	16.68

SUSQUEHANNA BASIN—STATION NO. 18

WEST BRANCH SUSQUEHANNA RIVER AT LOCK HAVEN

Location.—At four-span steel highway bridge, Jay Street, Lock Haven, Clinton County.

Drainage Area.—3,350 square miles.

Records Available.—October 1, 1913, to August 31, 1923, when the station was discontinued.

Gages.—Standard chain attached to downstream side of bridge; read to hundredths twice daily by E. A. McGill; during high stages more frequently. Elevation of gage zero 535.00 feet, United States Geological Survey datum. Previous to October 4, 1921, a painted staff gage on right side of first pier was read to half tenths; elevation of gage zero was 540.95 feet. The standard chain gage attached to the downstream side of the wooden covered bridge, for the purpose of obtaining low stages, was destroyed by fire on January 27, 1919.

Channel and Control.—Both banks are high and not subject to overflow. Control for medium and high stages is the remaining portion of an old dam about 2,300 feet below gage; probably permanent.

Extremes of Stage.—Maximum open-water gage height during the period October 1, to August 31, estimated from hydrograph, 14.5 feet at noon May 13; a gage height of 25.07 feet was observed at 12.30 p. m. March 4, but the water was held back by an ice jam; minimum, 0.83 foot from 5 p. m. October 6 to 7 a. m. October 7.

Ice.—Stage-discharge relation seriously affected by ice.

Gage heights obtained at this station are for Flood Warning purposes.

Daily Mean Gage Height, in feet, of West Branch Susquehanna River at Lock Haven, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.87	1.21	1.15	4.27	8.00	8.15	3.79	4.55	3.18	1.63	2.48	-------
2	.86	1.17	1.10	6.56	8.60	8.92	3.49	4.22	2.97	1.60	2.74	-------
3	.87	1.16	1.17	5.42	9.15	9.20	3.36	3.95	2.90	1.50	2.51	-------
4	.86	1.16	1.22	4.72	11.92	20.56	3.37	3.75	2.90	1.49	2.15	-------
5	.86	1.14	1.46	4.16	11.99	19.20	3.89	3.62	2.91	1.47	1.98	-------
6	.84	1.14	1.54	3.80	10.71	11.64	5.59	3.42	2.69	1.51	1.88	-------
7	.87	1.19	2.15	3.68	9.68	8.82	5.92	3.35	2.62	1.96	2.19	-------
8	.91	1.18	2.22	3.22	9.48	7.19	5.37	3.24	2.66	1.78	2.72	-------
9	.99	1.19	2.44	3.26	9.88	6.05	4.89	3.35	3.02	1.62	2.56	-------
10	1.12	1.21	2.75	3.19	9.42	5.35	4.47	3.65	2.81	1.62	2.17	-------
11	1.62	1.22	2.60	2.99	8.80	5.65	4.19	3.85	2.70	1.83	1.96	-------
12	2.17	1.24	2.25	2.98	8.25	6.42	3.92	4.49	2.53	1.71	1.75	-------
13	1.83	1.26	2.41	2.84	7.89	8.35	3.75	12.53	2.34	2.28	1.64	-------
14	1.58	1.22	2.01	2.46	8.69	8.65	3.49	11.12	2.25	1.87	1.52	-------
15	1.42	1.22	1.74	2.25	9.88	7.27	3.45	8.45	2.21	1.67	1.45	-------
16	1.36	1.21	1.51	2.30	9.37	6.79	3.35	7.26	2.14	1.73	1.39	-------
17	1.31	1.25	1.96	3.23	8.79	7.57	3.32	7.75	2.02	1.55	1.36	-------
18	1.21	1.51	2.08	3.66	8.39	7.19	3.29	7.22	1.94	1.44	1.32	-------
19	1.15	1.39	2.00	3.76	7.81	6.76	3.45	6.21	1.88	1.34	1.23	-------
20	1.14	1.39	1.89	3.76	8.07	6.27	3.45	5.62	1.82	1.25	1.20	-------
21	1.12	1.42	1.79	3.65	7.71	5.65	3.31	6.18	1.74	1.21	1.14	-------
22	1.08	1.33	1.76	5.00	7.77	5.21	3.25	8.40	1.68	1.16	1.17	-------
23	1.10	1.27	1.82	9.18	7.82	5.59	3.15	7.18	1.62	1.08	1.14	-------
24	1.13	1.27	1.89	11.44	7.25	7.34	3.05	6.21	1.63	1.08	1.17	-------
25	1.17	1.23	1.90	10.94	6.73	6.91	2.95	5.41	1.61	1.05	1.21	-------
26	1.49	1.19	1.85	10.38	6.62	6.03	2.82	4.92	1.57	1.01	1.17	-------
27	1.47	1.21	1.87	10.16	7.67	5.41	2.73	4.48	1.61	.99	1.15	-------
28	1.41	1.17	1.99	9.50	7.57	4.97	2.73	4.14	1.68	1.51	1.29	-------
29	1.38	1.17	2.51	9.18	-------	4.53	3.19	3.84	1.89	1.73	1.33	-------
30	1.37	1.19	3.59	8.80	-------	4.25	4.35	3.64	1.78	2.61	1.60	-------
31	1.27	-------	3.79	8.31	-------	3.95	-------	3.41	-------	2.89	2.02	-------

Note.—Stage-discharge relation Dec. 13 to Mar. 5 affected by ice. Station was discontinued on August 31, 1923.

SUSQUEHANNA BASIN—STATION NO. 19

BALD EAGLE CREEK AT MILESBURG

Location.—At two-span Pennsylvania Railroad bridge, Milesburg, Centre County, about 1,000 feet above mouth of Spring Creek.

Drainage Area.—140 square miles.

Records Available.—February 6, 1911, to September 30, 1923.

Gage.—Staff fastened to downstream end of bridge pier; read by P. H. Haupt.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank is high, steep and rocky; left is low and subject to overflow at extremely high stages. Control

is at a riffle about 100 feet upstream from the mouth of Spring Creek, where bed is composed of gravel and boulders; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 8.0 feet at 8 p. m. March 3 (discharge, about 10,800 second-feet); minimum, 0.02 foot estimated October 2-6 (discharge, 11 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 2,000 second-feet. Gage read to quarter tenths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for high stages when they are fair.

The following discharge measurement was made by H. J. McIntyre: No. 32, July 12: Gage height, 0.68 foot; discharge, 69.9 second-feet.

Daily Mean Gage Height, in feet, of Bald Eagle Creek at Milesburg, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.12	0.20	0.10	3.28	1.38	2.72	0.90	1.48	1.12	0.16	0.91	**0.36**
2	.20	.20	.10	2.22	1.38	2.82	.84	1.15	.95	.18	.70	**.34**
3	.20	.34	.10	1.72	2.60	5.12	.78	**.98**	.82	.28	.51	.30
4	.20	.24	.19	1.40	2.86	5.49	.88	.88	.68	.55	.69	**.35**
5	.20	.22	1.37	1.28	2.75	3.82	2.16	.88	.58	.52	1.88	**1.42**
6	.20	.20	.96	1.20	2.52	3.02	2.16	.92	.68	.42	1.98	1.80
7	.22	.20	.82	1.12	2.25	2.32	1.78	.86	.66	.32	1.28	.91
8	.36	.25	1.02	1.15	2.58	1.98	1.55	.86	.54	.24	**.94**	.95
9	.57	.26	.98	1.12	2.45	1.68	1.35	**1.08**	.42	.20	.79	.95
10	1.82	.22	.92	1.02	2.25	1.45	1.18	1.02	.35	.20	.61	.76
11	1.20	.18	.85	.98	2.18	1.54	1.08	1.41	.30	.75	.48	.64
12	.61	.28	.80	.92	2.12	3.22	.96	2.65	.27	.83	.44	.52
13	**.45**	**.24**	.76	.95	2.16	3.30	.84	3.16	.25	.51	.45	.46
14	**.40**	**.20**	.85	1.72	2.20	2.50	.85	2.42	.23	.38	.44	.42
15	**.36**	**.20**	1.00	1.41	2.22	2.08	.94	1.98	.20	.65	.38	.48
16	.38	.28	.88	1.28	2.24	1.92	.88	2.62	.17	.56	.35	.44
17	.42	.32	.82	1.18	2.25	2.27	.88	2.77	.16	.46	.34	.40
18	.38	.32	.72	1.10	2.25	2.30	1.05	2.12	.15	.38	.30	.36
19	.35	.32	.62	1.08	2.20	2.00	1.02	1.76	.15	.28	.28	.44
20	.34	.26	.52	.98	2.20	1.80	.92	2.28	.20	.20	.24	.40
21	.32	.20	.45	1.28	2.12	1.72	.86	4.16	.20	.16	.20	.48
22	.28	.18	.42	1.10	1.91	1.85	.92	3.22	.18	.18	**.55**	.54
23	.32	.15	.42	1.58	1.78	2.14	1.02	2.46	.18	.15	.42	**.56**
24	.48	.20	.50	2.10	1.64	2.14	.92	2.14	.18	.25	.32	**1.05**
25	.42	.20	.55	2.65	1.52	1.85	.82	1.90	.16	.34	.22	**.75**
26	.38	.20	.48	2.45	2.15	1.58	.74	1.74	.40	.25	.16	.58
27	.35	.24	.53	2.28	2.44	1.42	.70	1.62	.45	.18	.15	.48
28	.32	.20	2.30	2.08	2.62	1.31	1.12	1.52	.38	3.25	.62	.44
29	.28	.16	2.00	1.64	-------	1.19	2.26	1.42	.32	2.71	.61	.44
30	.24	.12	1.30	1.52	-------	1.08	1.92	1.32	.22	1.85	.45	.40
31	.20	-------	1.41	1.42	-------	.98	-------	1.22	-------	1.30	.40	-------

Note.—Stage-discharge relation Oct. 1-8 affected by backwater, and Jan. 8 to Mar. 3 affected by ice.

Daily discharge, in second-feet, of Bald Eagle Creek at Milesburg, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	21	15	1,340	150	120	92	198	121	19	98	33
2	11	21	15	470	130	180	84	129	99	20	67	31
3	11	31	15	255	160	2,200	77	103	82	27	46	28
4	11	24	20	175	220	4,850	89	89	65	50	66	32
5	11	22	165	155	220	1,990	445	89	53	47	330	175
6	11	21	100	137	220	1,010	445	95	65	38	375	290
7	13	21	82	121	190	525	290	87	62	30	155	93
8	30	24	106	110	180	375	212	87	49	24	98	99
9	52	25	103	100	160	255	165	121	38	21	78	99
10	290	22	95	90	140	186	137	106	32	21	56	74
11	137	20	85	80	130	212	121	175	28	73	43	60
12	56	27	79	80	130	1,220	100	735	26	83	40	47
13	40	24	74	75	160	1,340	84	1,160	24	46	40	41
14	36	21	85	75	190	640	85	580	23	34	40	38
15	33	21	106	75	180	420	98	375	21	61	34	43
16	34	27	89	75	200	330	89	700	19	51	32	40
17	38	30	82	80	200	498	89	805	19	41	31	36
18	34	30	69	80	200	525	114	420	18	34	28	33
19	32	30	57	90	180	375	106	272	18	27	27	40
20	31	25	47	100	160	290	95	525	21	21	24	36
21	30	21	40	110	140	255	87	2,580	21	19	21	43
22	27	20	38	110	120	310	95	1,220	20	20	50	49
23	30	18	38	130	120	445	106	610	20	18	38	51
24	43	21	45	180	110	445	95	445	20	24	30	114
25	38	21	50	220	110	310	82	330	19	31	22	73
26	34	21	43	160	110	226	72	272	36	24	19	53
27	32	24	48	140	110	175	67	226	40	20	18	43
28	30	21	525	120	110	155	121	198	34	1,280	57	40
29	27	19	375	110	-------	137	498	175	30	770	56	40
30	24	16	155	110	-------	121	330	155	22	310	40	36
31	21	-------	175	110	-------	103	-------	137	-------	155	36	-------

Note.—Discharge estimated, Oct. 1-8, because of back water, and Jan. 8 to Mar. 3, because of ice, from weather records, study of gage height graph and comparison with similar studies for Bald Eagle Creek at Beach Creek Station.

Monthly discharge of Bald Eagle Creek at Milesburg, for the year ending September 30, 1923.
(Drainage area, 140 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	290	11	40.6	0.290	0.33
November	31	16	23.0	.164	.18
December	525	15	97.5	.696	.80
January	1,340	75	170	1.21	1.40
February	220	110	158	1.13	1.18
March	4,850	103	652	4.66	5.37
April	498	67	152	1.09	1.22
May	2,580	87	426	3.04	3.50
June	121	18	38.2	.273	.30
July	1,280	18	111	.793	.91
August	375	18	67.6	.483	.56
September	290	28	63.7	.455	.51
The Year	4,850	11	168	1.20	16.28

SUSQUEHANNA BASIN—STATION NO. 20

BALD EAGLE CREEK AT BEECH CREEK STATION

Location.—At three-span steel highway bridge, Beech Creek Station, Pennsylvania Railroad, Clinton County.

Drainage Area.—565 square miles.

Records Available.—June 24, 1910, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by G. A. Rodgers.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Right bank is high and not subject to overflow; left bank subject to overflow at extremely high stages. Bed is composed of gravel and rocks. Control is at a riffle, about 1,000 feet below gage, where there is a pronounced fall; practically permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 8.8 feet at 5 a. m. March 4 (discharge, about 11,900 second-feet); minimum, 1.46 feet at 8 a. m. October 6 (discharge, 119 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation probably permanent except when affected by ice. Rating curve well defined below 800 second-feet and fairly well defined between 800 and 10,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

The following discharge measurement was made by J. M. Snavely: No. 41, July 12: Gage height, 2.21 feet; discharge, 514 second-feet.

Daily Mean Gage Height, in feet, of Bald Eagle Creek at Beech Creek Station, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.58	1.55	1.48	3.46	2.37	2.30	2.39	2.63	2.28	1.67	2.02	1.64
2	1.52	1.54	1.56	3.30	2.16	2.34	2.33	2.48	2.23	1.66	1.98	1.62
3	1.49	1.61	1.51	2.83	2.42	4.60	2.31	2.40	2.20	1.68	1.88	1.59
4	1.49	1.60	1.50	2.60	2.68	7.83	2.33	2.35	2.17	1.85	1.91	1.58
5	1.48	1.57	1.68	2.40	2.46	7.55	3.45	2.29	2.10	1.81	2.12	1.66
6	1.47	1.56	1.94	2.30	2.36	5.36	3.76	2.25	2.09	1.73	2.52	2.28
7	1.49	1.65	1.66	2.06	2.48	4.44	3.35	2.19	2.09	1.70	2.10	1.93
8	1.56	1.59	1.83	2.05	2.42	3.82	3.09	2.17	2.09	1.69	1.95	1.94
9	1.59	1.59	1.84	2.10	2.34	3.40	2.90	2.47	2.04	1.67	1.84	2.02
10	1.85	1.57	1.74	2.05	2.26	3.27	2.75	2.40	1.98	1.67	1.77	1.85
11	2.35	1.59	1.58	1.96	2.17	3.34	2.63	2.35	1.93	1.79	1.80	1.80
12	1.93	1.57	1.72	1.92	2.02	4.16	2.51	3.55	1.92	2.15	1.71	1.73
13	1.77	1.51	1.72	1.84	2.18	4.52	2.44	5.78	1.89	1.76	1.72	1.70
14	1.65	1.57	1.58	2.06	2.61	4.03	2.40	5.07	1.86	1.70	1.74	1.66
15	1.63	1.61	1.74	2.01	2.48	3.62	2.37	4.03	1.87	1.64	1.70	1.64
16	1.59	1.56	1.72	2.39	2.56	3.83	2.35	3.82	1.85	1.70	1.70	1.62
17	1.68	1.56	1.69	2.46	2.51	4.21	2.37	4.28	1.83	1.68	1.71	1.60
18	1.69	1.56	1.68	2.52	2.34	3.93	2.33	3.82	1.80	1.63	1.68	1.60
19	1.63	1.52	1.68	2.50	2.34	3.83	2.28	3.50	1.78	1.62	1.68	1.64
20	1.59	1.50	1.68	2.02	2.28	3.43	2.25	3.27	1.77	1.62	1.68	1.64
21	1.61	1.54	1.66	2.12	3.18	3.23	2.22	4.77	1.76	1.60	1.66	1.69
22	1.59	1.52	1.67	2.68	3.47	3.15	2.19	4.21	1.75	1.58	1.79	1.67
23	1.57	1.52	1.66	2.44	3.10	3.57	2.17	3.67	1.73	1.56	1.73	1.79
24	1.67	1.54	1.66	2.41	2.93	3.77	2.11	3.33	1.71	1.58	1.72	2.04
25	1.63	1.53	1.66	2.42	3.36	3.35	2.06	3.10	1.73	1.66	1.70	1.84
26	1.63	1.52	1.72	2.32	2.98	3.17	2.04	2.92	1.71	1.60	1.66	1.72
27	1.60	1.50	1.66	2.30	2.10	2.95	2.01	2.72	1.87	1.60	1.63	1.68
28	1.62	1.56	2.02	2.25	2.28	2.86	2.22	2.62	1.74	3.93	1.82	1.66
29	1.61	1.57	2.62	2.16	-------	2.61	3.30	2.49	1.75	4.43	1.95	1.64
30	1.59	1.52	2.16	2.06	-------	2.62	2.79	2.43	1.69	2.48	1.76	1.60
31	1.57	-------	2.11	1.96	-------	2.47	-------	2.34	-------	2.17	1.67	-------

Note.—Stage-discharge relation Jan. 16-20 and Feb. 21-27 affected by ice.

Daily discharge, in second-feet, of Bald Eagle Creek at Beech Creek Station, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	138	131	121	1,530	560	525	595	778	525	173	335	161
2	126	129	133	1,320	428	560	560	665	492	169	324	153
3	122	149	124	985	595	2,970	525	595	460	177	270	141
4	122	145	123	740	815	9,330	560	560	428	255	286	138
5	121	135	177	595	630	8,840	1,420	525	395	235	395	169
6	120	133	302	525	560	4,320	1,900	492	395	199	665	525
7	122	165	169	365	665	2,680	1,420	460	395	185	395	296
8	133	141	245	365	595	1,900	1,140	428	395	181	308	302
9	141	141	250	395	560	1,420	975	630	365	173	250	335
10	255	135	203	365	492	1,320	855	595	324	173	216	255
11	560	141	138	313	428	1,320	778	560	296	226	230	230
12	296	135	194	291	335	2,400	665	1,650	291	428	190	199
13	216	124	194	250	460	2,820	630	5,040	275	212	194	185
14	165	135	138	365	740	2,140	595	3,900	260	185	203	169
15	157	149	203	335	665	1,650	560	2,140	265	161	185	161
16	141	133	194	280	702	1,900	560	1,900	255	185	185	153
17	177	133	181	260	665	2,400	560	2,540	245	177	190	145
18	181	133	177	260	560	2,020	560	1,900	230	157	177	145
19	157	126	177	280	560	1,900	525	1,530	221	153	177	161
20	141	123	177	320	525	1,420	492	1,320	216	153	177	161
21	149	129	169	395	460	1,240	460	3,280	212	145	169	181
22	141	126	173	815	400	1,240	460	2,400	208	138	226	173
23	135	126	169	630	360	1,650	428	1,770	199	133	199	226
24	173	129	169	595	320	1,900	395	1,320	190	133	194	365
25	157	127	169	595	300	1,420	365	1,140	199	169	185	250
26	157	126	194	525	320	1,240	365	975	190	145	169	194
27	145	123	169	525	360	1,020	335	815	265	145	157	177
28	153	133	335	492	525	935	460	740	208	2,020	240	169
29	149	135	740	428	-------	740	1,320	665	208	2,680	308	161
30	141	126	428	365	-------	740	895	630	181	665	212	145
31	135	-------	395	313	-------	630	-------	560	-------	428	173	-------

Note.—Discharge Jan. 16-20 and Feb. 21-27 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Bald Eagle Creek at Milesburg, Clearfield Creek at Dimeling and Frankstown Branch Juniata River at Williamsburg.

Monthly discharge of Bald Eagle Creek at Beech Creek Station, for the year ending September 30, 1923.

(Drainage area, 565 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	560	120	169	0.299	0.34
November	165	123	134	.237	.26
December	740	121	217	.384	.44
January	1,530	250	509	.901	1.04
February	815	300	521	.922	.96
March	9,330	525	2,150	3.81	4.39
April	1,900	335	712	1.26	1.41
May	5,040	428	1,370	2.42	2.79
June	525	181	293	.519	.58
July	2,680	133	347	.614	.71
August	665	157	245	.434	.50
September	525	138	208	.368	.41
The Year	9,330	120	575	1.02	13.83

SUSQUEHANNA BASIN—STATION NO. 21

PINE CREEK AT CEDAR RUN

Location.—At single-span steel highway bridge, Cedar Run, Lycoming County.

Drainage Area.—590 square miles.

Records Available.—July 19, 1918, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by C. R. Nivison. Elevation of gage zero 781.96 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank is high; left is low but not subject to overflow. Bed is composed of gravel. Control is at a riffle, where the bed is composed of gravel, about 500 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 6.3 feet at midnight March 4-5 (discharge, about 8,580 second-feet); minimum, 1.01 feet at 5 p. m. August 26 (discharge, 23 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 50 and 2,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for high stages when they are fair.

The following discharge measurement was made by H. J. McIntyre: No. 18, July 10: Gage height, 1.18 feet; discharge, 56.2 second-feet. Measurement made by wading 800 feet below gage.

Daily Mean Gage Height, in feet, of Pine Creek at Cedar Run, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.18	1.28	1.28	2.01	2.16	2.52	2.30	2.30	1.93	1.29	1.18	1.08
2	1.17	1.28	1.27	2.64	2.30	2.52	2.26	2.22	1.86	1.26	1.17	1.06
3	1.18	1.28	1.28	2.54	2.32	3.17	2.22	2.14	1.83	1.23	1.84	1.06
4	1.18	1.27	1.26	2.06	2.30	5.18	2.27	2.12	1.85	1.23	1.76	1.06
5	1.18	1.26	1.34	1.92	2.18	5.74	3.61	2.09	1.82	1.22	1.65	1.15
6	1.18	1.26	1.34	1.62	2.14	4.52	4.22	2.05	1.73	1.23	1.38	1.41
7	1.18	1.27	1.34	2.00	2.18	3.86	3.82	2.03	1.67	1.21	1.26	1.34
8	1.31	1.28	1.34	2.11	2.31	3.40	3.47	1.99	1.81	1.21	1.21	1.29
9	1.33	1.28	1.32	1.94	2.44	3.02	3.19	2.17	1.75	1.17	1.16	1.34
10	1.52	1.27	1.36	1.79	2.36	2.76	2.95	2.29	1.69	1.17	1.12	1.32
11	1.58	1.27	1.37	1.78	2.23	2.78	2.76	2.25	1.61	1.18	1.10	1.28
12	1.56	1.28	1.33	1.70	2.18	3.08	2.61	2.82	1.56	1.18	1.10	1.16
13	1.40	1.28	1.36	1.68	2.26	3.24	2.52	4.34	1.55	1.16	1.14	1.12
14	1.32	1.26	1.36	1.85	2.32	3.11	2.48	3.89	1.51	1.16	1.20	1.10
15	1.32	1.28	1.35	2.02	2.26	2.88	2.35	3.48	1.48	1.16	1.16	1.08
16	1.30	1.28	1.32	1.98	2.24	3.60	2.24	3.48	1.46	1.15	1.12	1.08
17	1.33	1.26	1.52	1.89	2.20	4.16	2.18	3.78	1.40	1.14	1.10	1.08
18	1.32	1.28	1.50	1.78	2.19	3.94	2.09	3.39	1.37	1.12	1.10	1.06
19	1.28	1.28	1.49	1.84	2.28	3.90	2.06	3.18	1.37	1.11	1.10	1.09
20	1.30	1.28	1.50	1.87	2.27	3.50	2.00	3.06	1.37	1.10	1.08	1.10
21	1.24	1.26	1.52	2.04	2.30	3.31	1.97	3.49	1.35	1.08	1.02	1.20
22	1.25	1.24	1.54	2.30	2.30	3.22	1.94	3.75	1.35	1.08	1.12	1.38
23	1.24	1.24	1.60	2.40	2.30	4.17	1.89	3.44	1.31	1.09	1.06	1.26
24	1.39	1.24	1.60	2.28	2.20	4.78	1.88	3.10	1.30	1.06	1.03	1.22
25	1.47	1.20	1.59	2.40	2.23	4.02	1.84	2.84	1.31	1.06	1.02	1.32
26	1.39	1.18	1.58	2.38	2.32	3.58	1.80	2.63	1.31	1.04	1.02	1.22
27	1.32	1.24	1.58	2.32	2.42	3.22	1.78	2.46	1.32	1.06	1.02	1.20
28	1.32	1.26	1.65	2.27	2.52	3.02	1.78	2.33	1.31	1.20	1.18	1.18
29	1.30	1.28	1.72	2.20	-------	2.70	2.46	2.20	1.36	1.26	1.30	1.18
30	1.29	1.27	1.74	2.18	-------	2.66	2.32	2.09	1.33	1.26	1.21	1.16
31	1.28	-------	1.73	2.17	-------	2.59	-------	2.01	-------	1.20	1.15	-------

Note.—Stage-discharge relation Dec. 7-31 and Jan. 15 to Mar. 3 affected by ice.

Daily discharge, in second-feet, of Pine Creek at Cedar Run, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	49	76	76	380	340	600	630	630	327	79	49	32
2	47	76	73	995	420	600	585	540	282	70	47	29
3	49	76	76	885	460	850	540	500	265	62	270	29
4	49	73	70	420	380	5,570	585	460	276	62	232	29
5	49	70	94	319	340	6,890	2,220	460	259	59	190	44
6	49	70	94	181	306	3,920	3,320	420	219	62	105	114
7	49	73	70	380	340	2,730	2,550	420	197	56	70	94
8	85	76	70	460	420	1,960	2,070	372	254	56	56	79
9	91	76	70	334	460	1,410	1,670	500	228	47	45	94
10	148	73	70	244	380	1,110	1,350	630	204	47	38	88
11	168	73	70	240	300	1,170	1,110	585	177	49	34	76
12	161	76	70	207	300	1,540	940	1,170	161	49	34	45
13	111	76	70	200	340	1,670	830	3,520	158	45	42	38
14	88	70	70	276	460	1,540	830	2,730	145	45	53	34
15	88	76	70	240	420	1,290	680	2,070	136	45	45	32
16	82	76	70	220	380	2,220	585	2,070	130	44	38	32
17	91	70	80	200	380	3,320	540	2,550	111	42	34	32
18	88	76	110	170	360	2,730	460	1,930	102	38	34	29
19	76	76	100	190	420	2,730	420	1,670	102	36	34	33
20	82	76	110	200	420	2,070	380	1,540	102	34	32	34
21	65	70	120	220	420	1,800	357	2,070	96	32	24	53
22	68	65	130	340	420	1,670	334	2,550	96	32	38	105
23	65	65	140	550	380	3,320	298	1,930	85	32	29	70
24	108	65	140	460	340	4,580	298	1,540	82	29	26	59
25	133	53	140	550	340	2,920	270	1,230	85	29	24	88
26	108	49	130	500	420	2,220	248	995	85	27	24	59
27	88	65	130	460	460	1,670	240	780	88	29	24	53
28	88	70	140	380	550	1,410	240	680	85	53	49	49
29	82	76	170	340	-------	1,050	780	540	99	70	82	49
30	79	73	190	320	-------	995	630	460	91	70	56	45
31	76	-------	190	320	-------	940	-------	380	-------	53	44	-------

Note.—Discharge Dec. 7-31 and Jan. 15 to Mar. 3 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Towanda Creek near Monroeton and Lycoming Creek near Trout Run.

Monthly discharge of Pine Creek at Cedar Run, for the year ending September 30, 1923.

(Drainage area, 590 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	168	47	85.8	0.145	0.17
November	76	49	71.2	.121	.14
December	190	70	103	.175	.20
January	995	170	361	.612	.71
February	550	300	391	.663	.69
March	6,890	600	2,210	3.75	4.32
April	3,320	240	866	1.47	1.64
May	3,520	372	1,220	2.07	2.39
June	327	82	158	.268	.30
July	79	27	47.8	.081	.09
August	270	24	61.4	.104	.12
September	114	29	54.9	.093	.10
The Year	6,890	24	472	.800	10.87

WEST BRANCH SUSQUEHANNA RIVER AT JERSEY SHORE

Location.—At two-span steel highway bridge, Jersey Shore, Lycoming County.

Drainage Area.—5,240 square miles.

Records Available.—October 18, 1913, to March 31, 1923, when the station was discontinued.

Gages.—Staff painted on right abutment and standard chain attached to upstream side of bridge; read by C. B. McCullough to half tenths twice daily; during high stages more frequently. Zero elevation of both gages 517.33 feet, United States Geological Survey datum.

Channel and Control.—Right bank is low and subject to overflow; left is high and not subject to overflow. Bed is composed of gravel and rock.

Extremes of Stage.—Maximum gage height during the period October 1 to March 31. 27.00 feet observed at 11 a. m. March 5; minimum, 1.10 feet from 8 a. m. October 5 to 8 a. m. October 7.

Ice.—Stage-discharge relation seriously affected by ice.

Cooperation.—Station is maintained in cooperation with C. B. McCullough, Civil Engineer, Jersey Shore.

Gage heights obtained at this station are for Flood Warning purposes.

Daily Mean Gage Height, in feet, of West Branch Susquehanna River at Jersey Shore, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.18	1.45	1.35	3.45	6.05	5.50						
2	1.15	1.40	1.30	6.28	6.00	6.25						
3	1.15	1.40	1.30	7.84	6.45	7.35						
4	1.14	1.40	1.30	7.35		16.87						
5	1.10	1.38	1.45	6.05	10.30	22.02						
6	1.10	1.38	1.70	4.80	8.80	14.54						
7	1.12	1.39	1.95	4.19	7.59	10.45						
8	1.22	1.40	2.10	5.70	7.50	8.00						
9	1.32	1.40	2.14	6.20	7.55	6.65						
10	1.45	1.40	2.32		7.40	5.92						
11	1.95	1.40	2.26		6.82	5.85						
12	2.15	1.40	2.05		6.25	6.90						
13	1.95	1.45	1.85		5.78	8.60						
14	1.76	1.41	1.82		6.20	9.32						
15	1.62	1.46	1.80		7.40	7.75						
16	1.59	1.42	1.82	5.72	7.70	7.19						
17	1.55	1.39	1.95	5.65	6.65	8.57						
18	1.42	1.40	1.80	6.55	6.10	8.38						
19	1.40	1.43	1.76	6.50	5.68	7.82						
20	1.38	1.49	1.72	6.30	6.15	7.10						
21	1.38	1.50	1.81	6.58	5.45	6.32						
22	1.32	1.48	1.88	7.90	5.30	5.75						
23	1.36	1.48	1.80	9.85	5.28							
24	1.40	1.45	1.78	10.05	5.00							
25	1.48	1.43	1.80	9.45	4.45							
26	1.52	1.39	1.80	8.80	4.30	6.75						
27	1.62	1.36	1.75	8.35	4.88	5.90						
28	1.52	1.36	1.80	7.95	5.50	5.35						
29	1.50	1.35	2.18	7.50		4.75						
30	1.48	1.35	2.96	6.70		4.35						
31	1.48		3.02	6.35		4.05						

Note.—Stage discharge relation Dec. 12 to Jan. 1 and Jan. 16 to Mar. 4 affected by ice. Gage height Jan. 10-15, Feb. 4 and Mar. 23-25 not observed. Station was discontinued on Mar. 31, 1923.

LYCOMING CREEK NEAR TROUT RUN

Location.—At single-span steel highway bridge, about two and one-half miles above Trout Run, Lycoming County.

Drainage Area.—185 square miles.

Records Available.—December 4, 1913, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by E. L. Apker. Elevation of gage zero 693.4 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—The right bank overflows during extremely high stages; the left is high and does not overflow. The bed is composed of gravel and large stones. Control is at a riffle about 100 feet below gage, where the bed is composed of gravel; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 7.10 feet observed at 5 p. m. March 16 (discharge, 2,410 second-feet); minimum, 1.68 feet at 8 a .m. August 25 (discharge, 20 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined from 30 to 3,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

The following discharge measurement was made by J. M. Snavely: No. 54, July 10: Gage height, 1.86 feet; discharge, 20.4 second-feet.

Daily Mean Gage Height, in feet, of Lycoming Creek near Trout Run, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.85	1.95	1.90	4.28	2.50	2.40	2.98	2.80	2.51	2.00	1.96	1.85
2	1.84	1.95	1.90	3.78	2.49	2.40	3.14	2.68	2.46	1.98	1.94	1.84
3	1.83	1.96	1.90	3.22	2.54	2.91	3.13	2.56	2.41	1.96	1.92	1.82
4	1.83	1.96	1.90	3.08	2.45	5.00	3.48	2.55	2.39	1.94	1.92	1.80
5	1.82	1.95	2.00	2.98	2.55	4.74	5.83	2.55	2.36	1.91	1.98	1.82
6	1.82	1.98	2.00	2.82	2.52	4.40	5.71	2.56	2.34	1.88	1.93	1.82
7	1.86	1.97	2.00	2.74	2.58	4.24	4.78	2.58	2.34	1.86	1.90	1.80
8	1.94	1.98	2.02	2.68	2.49	3.89	4.39	2.58	2.95	1.86	1.98	2.07
9	2.08	1.97	2.14	2.65	2.46	3.45	4.02	3.10	2.58	1.84	1.98	2.22
10	2.86	1.96	2.10	2.60	2.42	3.34	3.75	3.02	2.46	1.84	1.90	2.10
11	2.73	1.95	2.01	2.47	2.40	3.48	3.59	2.86	2.29	1.84	1.85	2.00
12	2.35	1.96	2.05	2.45	2.36	4.08	3.35	4.00	2.26	1.84	1.84	1.96
13	2.22	1.94	2.00	2.38	2.42	4.15	3.22	4.52	2.24	1.83	1.81	1.92
14	2.14	1.91	2.00	2.36	2.50	3.91	3.12	4.07	2.20	1.82	1.80	1.89
15	2.09	1.92	1.95	2.50	2.44	3.63	3.04	3.80	2.14	1.81	1.80	1.85
16	2.05	1.92	2.10	2.40	2.66	5.16	2.98	5.08	2.12	1.80	1.79	1.80
17	2.08	1.92	2.02	2.39	2.68	5.55	2.88	5.16	2.08	1.79	1.78	1.78
18	2.14	1.92	1.95	2.65	2.72	5.00	2.80	4.50	2.08	1.78	1.77	1.82
19	2.08	1.95	2.15	2.35	2.65	4.98	2.78	4.06	2.06	1.76	1.76	1.81
20	2.02	1.94	2.05	2.35	2.68	4.22	2.75	3.75	2.01	1.74	1.76	1.80
21	2.00	1.92	2.05	2.58	2.51	4.06	2.64	4.22	2.00	1.74	1.74	1.83
22	1.99	1.90	2.05	2.90	2.42	4.29	2.60	3.78	1.99	1.73	1.73	1.88
23	2.02	1.90	2.02	2.65	2.48	4.98	2.59	3.55	1.98	1.70	1.72	1.93
24	1.98	1.91	1.98	2.66	2.66	5.72	2.54	3.35	1.98	1.70	1.70	2.18
25	2.08	1.90	1.95	2.66	2.42	4.82	2.50	3.22	1.97	1.70	1.68	2.20
26	2.02	1.91	1.95	2.59	2.39	4.48	2.46	3.12	1.97	1.72	1.70	2.08
27	2.00	1.91	1.95	2.52	2.38	4.08	2.44	3.00	2.00	1.71	1.70	2.00
28	2.00	1.90	2.18	2.50	2.44	3.94	2.51	2.84	2.00	1.98	1.82	1.96
29	2.00	1.90	2.36	2.50	-------	3.84	3.16	2.78	2.00	1.98	2.00	1.90
30	1.97	1.90	2.32	2.48	-------	3.50	2.85	2.70	1.98	2.08	1.98	1.91
31	1.96	-------	2.25	2.39	-------	3.38	-------	2.54	-------	2.02	1.89	-------

Note.—Stage-discharge relation Feb. 16-19 and 24 affected by ice.

Daily discharge, in second-feet, of Lycoming Creek near Trout Run, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	30	38	34	705	120	101	245	190	120	43	39	30
2	30	38	34	506	118	101	290	165	112	41	38	30
3	29	39	34	306	131	217	290	131	103	39	36	28
4	29	39	34	275	110	1,030	400	131	99	38	36	27
5	28	38	43	245	131	880	1,480	131	94	35	41	28
6	28	41	43	190	120	745	1,420	131	91	33	37	28
7	31	40	43	178	142	665	930	142	91	31	34	27
8	38	41	45	165	118	545	745	142	231	31	41	51
9	52	46	60	154	112	382	585	275	142	30	41	71
10	204	39	54	142	105	350	505	245	112	30	34	54
11	178	38	44	114	101	400	435	204	82	30	30	43
12	92	39	48	110	94	625	350	585	78	30	30	39
13	71	38	43	98	105	665	305	790	74	29	28	36
14	60	35	43	94	120	545	275	625	68	28	27	33
15	53	36	38	120	109	435	260	545	60	28	27	30
16	48	36	54	101	85	1,130	245	1,080	57	27	26	27
17	52	36	45	99	90	1,300	217	1,130	52	26	26	26
18	60	36	38	154	110	1,030	190	790	52	26	25	28
19	52	38	61	92	140	1,030	190	625	50	25	25	28
20	45	38	48	92	165	665	178	505	44	23	25	27
21	43	36	48	142	120	625	154	665	43	23	23	29
22	42	34	48	217	105	705	142	505	42	23	23	33
23	45	34	45	154	116	1,030	142	435	41	21	22	41
24	41	35	41	154	110	1,420	131	350	41	21	21	65
25	52	34	38	154	105	930	120	305	40	21	20	68
26	45	35	38	142	99	790	112	275	40	22	21	52
27	43	35	38	120	98	625	108	245	43	22	21	43
28	43	34	65	120	109	545	120	204	43	41	28	39
29	43	34	94	120	-------	505	290	190	43	41	43	34
30	40	34	87	116	-------	400	204	165	41	52	41	35
31	39	-------	76	99	-------	365	-------	131	-------	45	33	-------

NOTE.—Discharge Feb. 16-19 and 24 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Towanda Creek near Monroeton.

Monthly discharge of Lycoming Creek near Trout Run, for the year ending September 30, 1923.
(Drainage area, 185 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	204	28	54.4	0.294	0.34
November	41	34	36.9	.199	.22
December	94	34	48.5	.262	.30
January	705	92	177	.957	1.10
February	165	85	114	.616	.64
March	1,420	101	672	3.63	4.18
April	1,480	109	369	1.99	2.22
May	1,130	131	388	2.10	2.42
June	231	40	74.3	.402	.45
July	52	21	30.8	.166	.19
August	43	20	30.4	.164	.19
September	71	26	37.7	.204	.23
The Year	1,480	20	170	.919	12.48

SUSQUEHANNA BASIN—STATION NO. 24

WEST BRANCH SUSQUEHANNA RIVER AT WILLIAMSPORT

Location.—At five-span steel highway bridge, Market Street, Williamsport, Lycoming County.

Drainage Area.—5,670 square miles.

Records Available.—March 1, 1895, to September 30, 1923.

Gage.—Standard chain attached to upstream side of bridge; read by J. V. April. Elevation of gage zero 494.55 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Both banks are high and rocky. Bed is composed of silt and gravel; shifts slightly. Control probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 21.6 feet at 2 p. m. March 5 (discharge, about 147,000 second-feet); minimum, 0.00 foot from 5 p. m. October 2 to 8 a. m. October 7 (discharge, 580 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined below 2,000 second-feet and well defined between 2,000 and 120,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for low stages when they are fair.

The following discharge measurement was made by H. J. McIntyre: No. 50, July 9: Gage height, 0.49 foot; discharge, 1,360 second-feet.

Daily Mean Gage Height, in feet, of West Branch Susquehanna River at Williamsport, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.02	0.20	0.14	3.39	2.15	2.85	3.50	4.20	2.64	0.58	1.31	0.67
2	.00	.20	.08	5.24	2.12	3.25	3.25	3.74	2.42	.28	1.08	.52
3	.00	.19	.10	5.22	2.55	4.10	3.08	3.41	2.23	.14	1.31	.34
4	.00	.18	.12	4.75	3.35	7.95	2.97	3.15	2.11	.32	1.10	.29
5	.00	.18	.25	4.02	5.33	18.02	4.08	2.94	2.04	.45	1.23	.28
6	.00	.19	.36	3.43	4.86	14.51	6.55	2.76	1.95	.43	1.11	.50
7	.00	.22	.65	2.86	3.95	10.50	6.91	2.62	1.75	.38	.97	.65
8	-------	.19	.86	2.27	3.66	8.24	6.15	2.50	2.05	.56	1.00	.46
9	.05	.18	1.00	2.09	3.55	6.85	5.49	2.64	2.08	.53	1.41	.46
10	.32	.18	1.27	2.08	3.65	5.95	4.81	3.19	1.99	.40	1.04	.88
11	.81	.18	1.16	2.06	3.32	5.60	4.33	3.32	1.77	.46	.74	.91
12	1.14	.18	1.05	1.77	2.96	6.48	3.90	3.97	1.56	.52	.67	.88
13	.93	.18	.66	1.67	2.60	8.32	3.57	11.43	1.40	.67	.47	.82
14	.58	.20	.71	1.90	2.62	9.24	3.31	12.62	1.25	.83	.41	.75
15	.48	.21	.32	1.36	4.20	7.89	3.12	9.48	1.20	.55	.33	.63
16	.38	.18	.38	1.20	5.03	7.20	2.95	8.12	1.15	.40	.25	.34
17	.41	.18	$40	1.71	4.23	8.98	2.88	8.95	.99	.44	.25	.25
18	.33	.18	.65	1.96	3.74	8.85	2.75	8.15	.91	.33	.20	.24
19	.28	.21	.63	2.00	3.63	8.05	2.80	7.14	.81	.21	.21	.22
20	.21	.25	.59	2.10	3.27	7.31	2.80	6.40	.75	.18	.12	.20
21	.19	.20	.54	2.12	3.33	6.45	2.63	6.51	.69	.12	.13	.24
22	.14	.24	.51	2.40	3.04	5.86	2.58	8.85	.63	.09	.09	.34
23	.16	.24	.50	3.75	3.16	6.47	2.38	7.99	.60	.05	.10	.48
24	.18	.20	.58	4.70	3.00	8.73	2.23	6.73	.55	.07	.09	.62
25	.25	.20	.58	4.25	2.45	8.32	2.06	5.81	.51	.04	.10	.64
26	.27	.14	.57	4.08	2.19	7.16	1.95	5.05	.46	.02	.09	.72
27	.42	.12	.58	3.80	2.19	6.11	1.86	4.55	.45	.02	.10	.50
28	.34	.18	.65	3.45	2.79	5.54	1.75	4.01	.55	.26	.15	.42
29	.25	.14	1.15	3.01	-------	4.78	2.24	3.58	.60	1.93	.22	.36
30	.20	.14	1.92	2.79	-------	4.31	3.54	3.25	.73	1.57	.39	.31
31	.28	-------	2.29	2.72	-------	3.96	-------	2.89	-------	1.75	.46	-------

NOTE.—Gage height Oct. 8 not observed. Stage-discharge relation Dec. 16-31 and Jan. 17-20 affected by ice.

Daily discharge, in second-feet, of West Branch Susquehanna River at Williamsport, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	602	810	738	7,750	4,490	6,000	8,060	10,400	5,470	1,380	2,580	1,460
2	580	810	668	14,500	4,260	7,140	7,140	8,700	4,980	914	2,220	1,230
3	580	798	696	14,500	5,470	10,000	6,850	7,750	4,490	738	2,580	996
4	580	786	714	12,800	7,750	28,000	6,560	7,140	4,260	968	2,220	927
5	580	786	875	9,690	14,900	109,000	10,000	6,280	4,020	1,160	2,400	914
6	580	798	1,020	7,750	13,200	73,600	20,900	6,000	4,020	1,120	2,220	1,230
7	580	836	1,460	6,280	9,690	42,200	22,400	5,470	3,580	1,050	1,950	1,460
8	600	798	1,780	4,730	8,700	29,100	19,000	5,220	4,020	1,300	2,040	1,170
9	635	786	2,040	4,260	8,380	21,900	15,800	5,470	4,260	1,300	2,770	1,170
10	968	786	2,580	4,260	8,380	18,100	12,800	7,140	4,020	1,080	2,040	1,860
11	1,690	786	2,400	4,260	7,440	16,200	10,800	7,440	3,580	1,170	1,610	1,860
12	2,220	786	2,040	3,580	6,560	20,400	9,350	9,690	3,160	1,230	1,460	1,800
13	1,950	786	1,460	3,370	5,470	29,600	8,380	48,000	2,770	1,460	1,180	1,690
14	1,380	810	1,530	3,800	5,470	34,600	7,440	57,000	2,400	1,780	1,100	1,610
15	1,200	823	968	2,770	10,400	27,500	6,850	36,300	2,400	1,300	982	1,460
16	1,050	786	850	2,400	13,600	23,900	6,560	28,500	2,400	1,080	875	996
17	1,100	786	850	2,200	10,400	33,500	6,280	33,500	2,040	1,140	875	875
18	982	786	1,000	2,200	8,700	32,300	6,000	29,100	1,860	982	810	862
19	914	823	950	2,400	8,380	28,000	6,000	23,400	1,690	823	823	836
20	823	875	950	2,800	7,440	24,400	6,000	19,900	1,610	786	714	810
21	798	810	950	4,260	7,440	19,900	5,470	20,400	1,530	714	726	862
22	738	862	850	4,980	6,560	17,600	5,470	32,300	1,460	679	679	996
23	762	862	850	9,020	7,140	20,400	4,980	28,000	1,380	635	690	1,200
24	786	810	950	12,300	6,560	31,800	4,490	21,400	1,300	657	679	1,380
25	875	810	1,000	10,400	4,980	29,600	4,260	17,200	1,230	624	690	1,460
26	901	738	1,000	10,000	4,490	23,900	4,020	13,600	1,170	602	679	1,530
27	1,110	714	950	9,020	4,490	18,500	3,800	11,900	1,160	602	690	1,230
28	996	786	1,000	7,750	6,000	15,800	3,580	9,690	1,300	888	750	1,110
29	875	738	1,100	6,560	-------	12,800	4,490	8,380	1,380	3,800	836	1,020
30	810	738	2,000	6,000	-------	10,800	8,060	7,140	1,610	3,160	1,070	954
31	914	-------	4,000	5,730	-------	9,690	-------	6,280	-------	3,580	1,170	-------

NOTE.—Discharge estimated, Oct. 8, because of no gage height record, Dec. 16-31 and Jan. 17-20, because of ice, from weather records, study of gage height graph and comparison with similar studies for Susquehanna River at Harrisburg.

Monthly discharge of West Branch Susquehanna River at Williamsport, for the year ending September 30, 1923.

(Drainage area, 5,670 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	2,220	580	940	0.166	0.19
November	875	714	797	.141	.16
December	4,000	668	1,300	.229	.26
January	14,500	2,200	6,530	1.15	1.33
February	14,900	4,260	7,740	1.37	1.43
March	109,000	6,000	26,700	4.71	5.43
April	22,400	3,380	8,390	1.48	1.65
May	57,000	5,220	17,400	3.07	3.54
June	5,470	1,160	2,680	.473	.53
July	3,800	602	1,250	.220	.25
August	2,770	679	1,360	.240	.28
September	1,860	810	1,230	.217	.24
The Year	109,000	580	6,380	1.13	15.29

SUSQUEHANNA BASIN—STATION NO. 25

WEST BRANCH SUSQUEHANNA RIVER AT LEWISBURG

Location.—At six-span steel highway bridge, Market Street, Lewisburg, Union County.

Drainage Area.—6,830 square miles.

Records Available.—September 21, 1913, to August 31, 1923, when the station was discontinued.

Gage.—Standard chain attached to downstream side of bridge; read to hundredths twice daily by T. E. Irland; during high stages more frequently. Elevation of gage zero 427.9 feet, United States Geological Survey datum.

Channel and Control.—Right bank is high and not subject to overflow; left is of medium height and is overflowed during extremely high stages. Bed is composed of gravel.

Extremes of Stage.—Maximum gage height during the period October 1 to August 31, estimated from hydrograph, 18.3 feet at 11 p. m. March 5; minimum—0.68 foot at 7 a. m. October 4.

Ice.—Stage-discharge relation usually affected by ice.

Gage heights obtained at this station are for Flood Warning purposes.

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Daily Mean Gage Height, in feet, of West Branch Susquehanna River at Lewisburg, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	—0.63	—0.27	—0.39	2.62	1.40	1.25	2.56	2.68	1.53	0.02	0.91	-------
2	—.65	—.29	—.35	4.01	1.24	1.49	2.23	2.49	1.45	—.15	.58	-------
3	—.66	—.24	—.39	3.69	1.33	2.25	2.05	2.18	1.28	—.21	.67	-------
4	—.67	—.25	—.41	3.54	1.74	5.60	1.95	1.92	1.18	—.23	.83	-------
5	—.64	—.32	—.35	3.03	3.38	14.54	2.58	1.75	1.11	—.16	.71	-------
6	—.65	—.28	—.16	2.31	3.76	14.45	4.95	1.57	1.08	—.07	.66	-------
7	—.63	—.20	—.08	2.08	2.82	9.65	5.80	1.43	1.00	—.15	.54	-------
8	—.50	—.25	.11	1.52	2.27	7.33	5.17	1.41	.97	—.11	.42	-------
9	—.47	—.25	.25	1.22	2.26	5.68	4.38	1.53	1.15	—.07	.47	-------
10	—.34	—.27	.40	1.16	2.32	4.64	3.71	1.93	1.11	—.04	.56	-------
11	—.04	—.29	.49	1.22	2.15	4.20	3.20	2.10	.98	.03	.34	-------
12	.34	—.33	.43	1.04	1.79	4.35	2.76	2.47	.83	—.03	.18	-------
13	.33	—.33	.35	1.06	1.55	6.38	2.48	7.28	.62	.07	.12	-------
14	.16	—.36	.12	.69	1.34	7.79	2.24	10.82	.61	.19	.03	-------
15	.02	—.31	.06	.53	1.80	7.01	2.04	8.26	.51	.13	—.04	-------
16	—.08	—.33	—.20	.47	2.44	6.13	1.92	6.63	.42	—.01	.09	-------
17	—.11	—.33	.03	.65	2.49	7.85	1.76	7.05	.33	—.08	—.14	-------
18	—.13	—.35	.04	2.08	1.96	7.88	1.72	6.84	.28	—.12	—.17	-------
19	—.14	—.32	.33	1.90	1.67	7.21	1.65	5.85	.23	—.18	—.21	-------
20	—.23	—.31	.13	1.50	1.39	6.46	1.68	4.86	.18	—.25	—.20	-------
21	—.31	—.23	.00	1.52	1.28	5.48	1.56	4.74	.18	—.27	—.25	-------
22	—.34	—.29	.06	1.72	1.27	4.83	1.50	6.52	.11	—.33	—.23	-------
23	—.36	—.31	.05	2.67	1.26	4.98	1.37	6.52	.04	—.39	—.29	-------
24	—.34	—.32	.02	3.70	1.24	7.18	1.30	5.50	.03	—.39	—.32	-------
25	—.36	—.31	.03	3.50	1.04	7.54	1.22	4.40	.02	—.33	—.33	-------
26	—.36	—.34	.01	3.12	.94	6.23	1.11	3.72	.03	—.39	—.32	-------
27	—.30	—.39	.01	2.79	.87	5.14	1.03	3.19	—.01	—.41	—.32	-------
28	—.27	—.38	.06	2.48	1.11	4.34	1.00	2.74	—.06	.80	—.32	-------
29	—.33	—.39	.41	2.13	-------	3.68	1.16	2.39	.03	1.92	—.06	-------
30	—.36	—.36	1.00	1.83	-------	3.25	1.91	1.99	.08	1.71	.01	-------
31	—.27	-------	1.72	1.50	-------	2.92	-------	1.73	-------	1.01	.02	-------

Note.—Stage-discharge relation Dec. 19-31 and Jan. 17-21 affected by ice. Station was discontinued on August 31, 1923.

SUSQUEHANNA BASIN—STATION NO. 26

SUSQUEHANNA RIVER AT SUNBURY

Location.—At twenty eight-span steel bridge, Philadelphia & Reading Railway Company, Sunbury, Northumberland County.

Drainage Area.—18,200 square miles.

Records Available.—August 9, 1916, to September 30, 1923.

Gage.—Staff painted on left face of first pier, graduated to two hundredths between zero and 3.3 feet and to half feet above 3.0 feet. Read to hundredths between zero and 3.3 feet and to inches above 3.3 feet twice daily by W. E. Bayler; during high stages more frequently. Elevation of gage zero 420.00 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of highway bridge about 3,700 feet below gage.

Channel and Control.—Both banks are high but subject to overflow during extreme floods. Bed is composed of gravel and rock. Control is the remaining portion of the old Shamokin Dam about 6,800 feet below gage; permanent.

Extremes of Stage.—Maximum gage height during the year, estimated from hydrograph, 13.8 feet at 10 p. m. March 5; minimum, —0.51 foot from 5 p. m. July 24 to 5 p. m. July 27.

Ice.—Stage-discharge relation usually affected by ice.

The following discharge measurement was made by J. M. Snavely and H. J. McIntyre: No. 5, July 17: Gage height,—0.06 foot; discharge, 3,300 second-feet.

Gage heights obtained at this station are for Flood Warning purposes.

Daily Mean Gage Height, in feet, of Susquehanna River at Sunbury, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.00	0.10	0.02	1.60	1.45	1.32	3.08	2.80	1.57	0.28	1.01	0.20
2	—.02	.10	.02	3.27	1.73	1.40	2.70	2.90	1.45	.22	.81	.12
3	—.04	.11	.02	3.98	1.83	1.80	2.59	2.85	1.36	.12	.66	.02
4	—.06	.09	.02	4.27	1.90	3.58	2.51	2.63	1.22	.07	.76	—.05
5	—.08	.05	.03	3.58	1.68	9.82	2.50	2.34	1.20	.04	.76	—.09
6	—.11	.02	.30	2.99	1.98	11.75	4.57	2.15	1.17	.19	.64	—.02
7	—.04	.02	.40	2.56	2.40	8.38	7.58	1.96	1.15	.15	.51	.00
8	—.06	.02	.50	2.00	2.25	6.34	7.25	1.75	1.20	.12	.39	.13
9	.01	.02	.50	1.57	2.28	5.21	6.22	1.95	1.60	.09	.33	.20
10	.15	.06	.60	1.59	2.25	4.38	5.21	2.80	1.60	.08	.46	.34
11	.29	.06	.60	1.38	2.18	4.00	4.42	2.87	1.60	.18	.31	.38
12	.36	.06	.60	1.31	2.05	4.21	3.92	3.62	1.69	.20	.18	.31
13	.40	.06	.60	1.49	1.89	5.00	3.50	5.48	1.58	.11	.15	.30
14	.40	.06	.50	1.38	1.67	6.25	3.12	7.68	1.42	.08	.14	.22
15	.40	.07	.50	.80	1.45	5.92	2.90	6.34	1.27	.13	.08	.17
16	.40	.10	.42	.78	1.68	5.28	2.77	5.20	1.07	.02	—.01	.11
17	.37	.10	.34	.99	2.00	6.71	2.60	5.17	.98	.00	—.07	.03
18	.36	.10	.29	.55	1.85	8.11	2.47	5.50	.88	—.03	—.14	—.03
19	.31	.07	.22	1.14	1.68	7.79	2.27	5.17	.74	—.12	—.18	—.07
20	.27	.04	.17	.95	1.57	7.12	2.18	4.46	.64	—.20	—.22	—.10
21	.15	.02	.13	1.30	1.48	6.34	2.08	4.00	.59	—.23	—.24	.12
22	.06	.00	.16	1.72	1.46	5.38	1.98	4.62	.52	—.37	—.23	.35
23	.01	.00	.28	2.27	1.38	5.25	1.87	4.62	.47	—.45	—.21	.43
24	—.04	.00	.30	2.58	1.32	7.00	1.78	4.12	.43	—.50	—.21	.77
25	—.07	.00	.30	3.00	1.30	8.50	1.67	3.58	.34	—.51	—.22	.65
26	—.02	—.03	.30	2.86	1.30	7.84	1.58	3.10	.27	—.51	—.26	.51
27	.00	—.04	.42	2.77	1.30	6.29	1.52	2.77	.28	—.51	—.31	.56
28	.00	—.04	.55	2.62	1.35	5.33	1.44	2.45	.22	1.34	—.21	.57
29	—.03	.01	.68	2.60	-------	4.46	1.85	2.14	.26	2.67	—.02	.50
30	.03	.02	.78	1.90	-------	3.92	2.50	1.95	.26	2.17	.15	.42
31	.09	-------	.87	1.65	-------	3.50	-------	1.75	-------	1.22	.20	-------

SUSQUEHANNA BASIN—STATION NO. 27

FRANKTOWN BRANCH JUNIATA RIVER AT WILLIAMSBURG

Location.—At two-span steel highway bridge, Williamsburg, Blair County.

Drainage Area.—295 square miles.

Records Available.—October 24, 1916, to September 30, 1923.

Gage.—Standard chain attached to upstream side of bridge; read by R. E. Rhule. Elevation of gage zero 831.78 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both banks are high but subject to overflow at extremely high stages. Bed is composed of mud, gravel and small boulders. Control for low stages is a water main crossing the stream diagonally about 150 feet below gage; permanent. Medium and high stage control is at the first of a series of riffles about 450 feet below the water main; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 7.2 feet at 4 a. m. March 4 (discharge, 2,960 second-feet); minimum, 1.30 feet at 4 p. m. November 11 (discharge, 36 second-feet).

Ice.—Stage-discharge relation rarely affected by ice.

Accuracy.—Stage-discharge relation permanent. Rating curve well defined between 70 and 2,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for extremely high stages when they are fair.

Discharge measurements of Frankstown Branch Juniata River at Williamsburg, during the year ending September 30, 1923.

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.ft.
19	Oct. 31	J. M. Snavely	1.51	66.8
20	Apr. 26	do	2.89	353

Daily Mean Gage Height, in feet, of Frankstown Branch Juniata River at Williamsburg, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.50	1.49	1.56	3.78	2.54	3.32	2.48	3.30	2.36	1.62	2.16	1.63
2	1.50	1.52	1.54	3.16	3.33	3.35	2.50	3.12	2.16	1.72	2.00	1.52
3	1.50	1.52	1.49	2.54	4.48	5.56	2.54	2.94	2.16	1.74	1.94	1.54
4	1.50	1.52	1.54	2.28	4.18	6.70	2.52	2.84	2.10	1.87	2.00	1.71
5	1.50	1.48	2.02	2.09	3.63	5.83	3.12	2.73	2.02	1.78	2.29	1.70
6	1.50	1.56	1.84	1.95	2.78	4.57	3.56	2.62	2.21	2.06	3.02	2.02
7	1.50	1.62	1.60	1.85	2.70	4.00	3.12	2.58	2.21	1.88	2.45	1.76
8	1.50	1.60	1.60	1.55	2.80	3.52	3.10	2.56	2.13	1.74	2.24	2.20
9	1.50	1.58	1.59	1.95	2.74	3.19	2.94	3.16	1.95	1.76	2.20	1.88
10	1.75	1.52	1.53	1.86	2.52	3.34	2.80	2.80	1.90	1.67	1.96	1.72
11	1.80	1.44	1.51	1.74	2.41	3.74	2.68	2.74	1.88	1.95	2.06	1.70
12	1.55	1.52	1.51	1.80	2.18	5.44	2.57	4.18	1.94	1.81	1.90	1.71
13	1.50	1.55	1.44	1.66	2.98	5.33	2.67	4.85	1.88	1.74	1.99	1.62
14	1.50	1.56	1.48	1.58	4.42	4.55	4.13	4.30	1.83	1.66	1.80	1.62
15	1.50	1.55	1.47	1.92	3.05	3.88	3.84	3.86	1.84	1.79	1.75	1.62
16	1.50	1.53	1.46	2.00	2.40	3.82	3.91	4.01	1.80	1.79	1.74	1.54
17	1.50	1.54	1.48	1.71	2.48	3.76	4.75	3.98	1.80	1.73	1.74	1.61
18	1.50	1.56	1.52	1.82	2.38	3.50	4.85	3.54	1.76	1.68	1.71	1.62
19	1.50	1.50	1.50	1.88	2.59	3.46	4.59	3.34	1.75	1.61	1.68	1.63
20	1.50	1.56	1.48	1.90	2.60	3.21	4.65	3.31	1.75	1.65	1.78	1.65
21	1.50	1.56	1.50	2.44	2.24	3.14	4.25	4.37	1.74	1.59	1.74	1.64
22	1.50	1.54	1.50	3.59	2.28	3.21	3.92	3.62	1.74	1.50	1.86	1.62
23	1.50	1.52	1.42	3.24	2.14	3.90	3.67	3.42	1.88	1.58	1.75	1.60
24	1.50	1.51	1.49	2.40	1.97	4.07	3.33	3.22	1.78	1.55	1.73	1.66
25	1.50	1.50	1.50	2.59	2.10	3.59	3.10	3.07	1.78	1.86	1.59	1.65
26	1.50	1.46	1.52	2.42	2.25	3.50	2.92	2.91	1.75	1.67	1.62	1.66
27	1.50	1.57	1.60	2.30	3.17	3.30	2.83	2.79	1.83	1.88	1.73	1.84
28	1.50	1.57	2.58	2.30	3.38	3.11	3.06	2.64	1.74	3.47	1.66	1.67
29	1.50	1.56	2.80	2.84	-------	2.73	4.21	2.54	1.84	2.57	1.77	1.52
30	1.50	1.50	2.09	2.41	-------	2.95	3.52	2.40	1.67	1.98	1.68	1.40
31	1.50	-------	2.15	2.29	-------	2.70	-------	2.32	-------	2.81	1.66	-------

Daily discharge, in second-feet, of Frankstown Branch Juniata River at Williamsburg, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	63	62	72	682	272	492	260	492	226	80	182	82
2	63	66	99	457	492	527	260	425	182	98	150	66
3	63	66	62	272	1,000	1,660	272	380	182	102	138	69
4	63	66	69	215	855	2,520	260	351	171	124	150	96
5	63	61	150	171	602	1,800	425	324	150	109	215	94
6	63	72	119	140	337	1,050	602	284	193	160	395	150
7	63	80	77	121	310	767	425	284	193	126	248	105
8	63	77	77	70	337	564	425	272	182	102	204	193
9	63	74	76	140	324	457	380	457	140	105	193	126
10	103	66	67	123	260	492	337	337	130	88	142	98
11	112	54	64	102	237	640	310	324	126	140	160	94
12	70	66	64	112	193	1,520	272	855	138	114	130	96
13	63	70	54	86	395	1,460	297	1,160	126	102	148	80
14	63	72	61	74	950	1,050	311	900	117	86	112	80
15	63	70	59	134	395	724	682	724	119	110	103	80
16	63	67	57	150	237	682	724	767	112	110	102	69
17	63	69	71	96	260	682	1,160	767	112	100	102	79
18	63	72	66	115	237	564	1,160	564	105	90	96	80
19	63	63	63	126	284	564	1,050	492	103	79	90	82
20	63	72	61	130	284	457	1,050	492	103	85	109	85
21	63	72	63	248	204	425	855	950	102	76	102	83
22	63	69	63	602	215	457	724	602	102	63	123	80
23	63	66	51	457	182	724	640	527	126	74	103	77
24	63	64	62	237	144	811	492	457	109	70	100	86
25	63	63	63	284	171	602	425	425	109	123	76	85
26	63	57	66	237	204	564	365	365	103	88	80	86
27	63	73	77	215	457	492	351	337	117	126	100	119
28	63	73	284	215	527	425	425	297	102	564	86	88
29	63	72	337	351	-------	324	855	272	119	272	107	66
30	63	63	171	237	-------	380	564	237	88	146	90	49
31	63	-------	182	215	-------	310	-------	215	-------	337	86	-------

Monthly discharge of Frankstown Branch Juniata River at Williamsburg, for the year ending September 30, 1923.

(Drainage area, 295 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	112	63	66.1	0.224	0.26
November	80	54	67.9	.230	.26
December	337	51	92.5	.314	.36
January	682	70	220	.746	.86
February	1,000	144	370	1.25	1.30
March	2,520	310	780	2.64	3.04
April	1,160	260	562	1.91	2.13
May	1,160	215	495	1.68	1.94
June	226	88	133	.451	.50
July	564	63	131	.444	.51
August	395	76	136	.461	.53
September	193	49	90.8	.308	.34
The Year	2,520	49	262	.888	12.03

SUSQUEHANNA BASIN—STATION NO. 28

LITTLE JUNIATA RIVER AT TYRONE

Location.—At single-span steel highway bridge, Pennsylvania Avenue, Tyrone, Blair County.

Drainage Area.—107 square miles.

Records Available.—August 22, 1918, to December 31, 1919, and April 1, 1920, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read to hundredths twice daily by Chas. G. Waple; during high stages more frequently. Elevation of gage zero 877.04 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both banks are high. Bed is composed of gravel and rock. Control is at a riffle about 700 feet below gage. Stage-discharge relation for medium and high stages is affected by backwater from Bald Eagle Creek, which confluences with the Little Juniata about 200 feet below gage.

Extreme of Stage.—Maximum gage height during the year, estimated from hydrograph, 6.8 feet at 8 p. m. March 3; minimum, 0.85 foot at 8 a. m. October 22.

Ice.—Stage-discharge relation usually affected by ice.

The following discharge measurement was made by J. M. Snavely: No. 6, April 27: Gage height, 1.98 feet; discharge, 131 second-feet.

Gage heights obtained at this station are for Flood Warning purposes.

Daily Mean Gage Height, in feet, of Little Juniata River at Tyrone, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.91	0.87	0.94	2.85	1.74	2.28	1.80	2.76	1.92	1.20	1.78	1.12
2	.90	.88	.94	2.40	2.65	2.35	1.84	2.57	1.88	1.24	1.69	1.10
3	.89	.98	.93	2.08	2.96	5.29	1.96	2.42	1.88	1.29	1.65	1.10
4	.88	.94	.92	1.80	2.65	5.80	1.96	2.32	1.77	1.59	1.64	1.10
5	.87	.90	1.59	1.68	2.40	4.92	2.73	2.24	1.70	1.30	1.78	1.23
6	.86	.94	1.10	1.60	2.18	4.05	2.68	2.18	1.88	1.22	1.66	1.42
7	.93	1.04	1.06	1.48	2.12	3.60	2.44	2.07	1.90	1.18	1.54	1.60
8	1.04	.96	1.08	1.41	2.06	3.16	2.34	2.20	1.77	1.16	1.46	1.73
9	1.12	.95	1.02	1.44	2.06	2.70	2.22	2.46	1.70	1.14	1.35	1.63
10	1.73	.94	.99	1.44	2.00	2.30	2.15	2.34	1.64	1.24	1.34	-------
11	1.36	.93	.98	1.49	1.88	2.28	2.08	2.50	1.56	1.22	1.33	-------
12	1.02	.94	.97	1.38	1.65	4.18	2.02	4.63	1.52	1.36	1.32	-------
13	.94	.92	.96	1.25	2.50	3.91	1.99	4.92	1.50	1.20	1.28	-------
14	.94	.92	.96	1.58	3.22	3.46	2.18	3.82	1.50	1.11	1.24	1.08
15	.92	.96	.99	1.51	2.40	3.20	2.18	3.38	1.50	1.10	1.22	1.05
16	.92	.94	.98	1.48	2.06	3.21	2.62	3.76	1.44	1.08	1.20	1.02
17	.98	.92	.96	1.38	1.99	3.15	2.76	3.48	1.38	1.06	1.18	1.00
18	.98	.92	.94	1.31	1.95	3.11	2.72	3.04	1.34	1.04	1.20	.98
19	.92	.93	.92	1.38	1.92	3.08	2.68	2.90	1.30	1.04	1.20	.98
20	.89	1.02	.90	1.41	1.90	2.98	2.54	3.54	1.29	1.02	1.19	.97
21	.86	.94	.92	1.88	1.89	2.88	2.50	4.73	1.28	1.01	1.18	.96
22	.86	.94	.94	2.35	1.80	3.00	2.45	3.71	1.26	1.00	1.14	.96
23	1.00	.92	1.00	2.15	1.64	3.33	2.30	3.23	1.24	.98	1.12	1.05
24	1.08	.92	1.06	2.45	1.55	3.27	2.22	2.98	1.20	1.04	1.10	1.04
25	1.02	.92	1.02	2.31	1.70	2.98	2.15	2.77	1.29	1.06	1.10	1.08
26	.99	.94	1.12	2.12	1.82	2.85	2.08	2.62	1.28	1.03	1.08	1.28
27	.94	.96	1.30	1.88	2.12	2.72	2.02	2.46	1.26	1.19	1.06	1.18
28	.94	1.00	2.73	1.77	2.28	2.63	2.59	2.31	1.26	3.60	1.25	1.13
29	.92	.98	2.00	1.71	-------	2.36	3.18	2.20	1.24	2.56	1.22	1.12
30	.90	.96	1.52	1.68	-------	2.28	2.88	2.13	1.22	2.01	1.18	1.10
31	.88	-------	1.30	1.66	-------	2.05	-------	2.02	-------	2.55	1.14	-------

Note.—Gage height Sept. 10-13 not observed, because of bridge repairs.

SUSQUEHANNA BASIN—STATION NO. 29

FRANKSTOWN BRANCH JUNIATA RIVER AT HUNTINGDON

Location.—At three-span steel highway bridge, known as Smithfield Bridge, Huntingdon, Huntingdon County.

Drainage Area.—845 square miles.

Records Available.—September 29, 1915, to Feb. 3, 1923, when the station was discontinued.

Gage.—Standard chain attached to downstream side of bridge; read to half tenths thrice daily by Lawrence White. Elevation of gage zero 599.10 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both banks are high but subject to overflow at extremely high stages. Bed is composed of gravel and rocks.

Control is a fish trap wall, about 800 feet below the gage, which was constructed during the fall of 1919.

Extremes of Stage.—Maximum gage height during the period October to February 3, 3.90 feet observed at 7 a. m. April 30; minimum, 0.55 foot several times in October.

Ice.—Stage-discharge relation not seriously affected by ice.

Regulation.—There are large fluctuations in daily stage during low flows caused by the operation of a power plant about four miles above the gage.

Discharge measurements of Frankstown Branch Juniata River at Huntingdon, during the year ending September 30, 1923.

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
69	Nov. 1	J. M. Snavely	0.72	87.6
70	Apr. 26	H. J. McIntyre	2.63	1,270

Daily Mean Gage Height, in feeet, of Frankstown Branch Juniata River at Huntingdon, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.93	0.70	0.87	2.52	1.73							
2	1.02	.70	1.00	3.25	1.98							
3	1.05	.70	.92	2.13	2.98							
4	1.00	1.00	.90	1.57								
5	1.00	.70	1.52	1.72								
6	1.03	1.32	1.90	1.72								
7	.67	.97	1.22									
8	.80	1.20	1.38									
9	1.28	1.18	1.20									
10	2.03	1.25	.70									
11	1.37	1.00	1.15	1.70								
12	1.35	.70	1.22	1.45								
13	.98	.70	1.23									
14	1.15	1.17	1.08									
15	.85	1.12	.70	1.45								
16	1.18	1.12	1.35	1.62								
17	1.28	1.43	.82	1.38								
18	.93	.98	1.15	1.33								
19	.95	.72	.90	1.60								
20	.87	.97	.78	1.60								
21	1.18	1.08		1.87								
22	.58	1.30		2.52								
23	.55	1.27	1.03	2.33								
24	1.35	.70	.77	1.15								
25	1.32	1.20	1.12	1.92								
26	1.25	.70	1.07	2.37								
27	1.25	1.00	1.18	1.65								
28	.72	1.03	2.18									
29	.70	1.23	2.67	2.17								
30	1.10	.72	1.42	2.08								
31	.70		1.07	1.48								

Note.—Gage height Dec. 21, 22, Jan. 7-10, 13, 14 and 28 not observed. Station discontinued Feb. 8, 1923.

SUSQUEHANNA BASIN—STATION NO. 30

RAYSTOWN BRANCH JUNIATA RIVER AT SAXTON

Location.—At two-span steel highway bridge, Saxton, Bedford County.

Drainage Area.—790 square miles.

Records Available.—August 31, 1911, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by D. R. Jenkins. Elevation of gage zero 789.91 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Banks are high but subject to overflow during extremely high stages. Control was at a heavy boulder riffle 350 feet below gage until about the first of February 1921, when a new one was formed by the reconstruction of the Huntingdon & Broad Top Mountain Railroad bridge 250 feet below the gage, which was partially washed away during the high flow of November 29, 1921.

Extremes of Discharge.—Maximum stage during the year, 5.75 feet observed at 5 p. m. April 17 (discharge, 5,020 second-feet); minimum, 0.88 foot at 5 p. m. October 2 and 4 (discharge, 90 second-feet)

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation probably permanent except when affected by ice. Rating curve well defined between 100 and 1,000 second-feet and fairly well defined from 1,000 to 12,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for low stages, when they are fair.

Discharge measurements of Raystown Branch Juniata River at Saxton, during the year ending September 30, 1923.

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
51	Oct. 31a	J. M. Snavely	1.02	104
52	Dec. 5a	do	1.25	141
53	5a	do	1.25	133
54	Apr. 27	H. J. McIntyre	2.68	763

a Measurement made by wading 200 feet below gage.

Daily Mean Gage Height, in feet, of Raystown Branch Juniata River at Saxton, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.92	0.98	1.08	2.87	2.91	2.90	2.31	3.82	2.10	1.90	2.85	1.20
2	.89	.96	1.06	4.36	3.48	2.74	2.27	3.48	2.03	1.65	2.33	1.17
3	.92	.96	1.05	3.17	4.80	2.95	2.32	3.23	1.97	1.57	2.12	1.12
4	.89	1.05	1.01	2.65	4.70	4.08	2.26	2.95	1.88	1.52	2.30	1.10
5	.91	1.00	1.24	2.35	3.82	4.42	2.42	2.75	1.85	1.54	2.54	1.35
6	.93	.99	1.33	2.07	3.25	3.95	3.51	2.66	2.61	2.18	2.59	1.53
7	.95	1.07	1.43	1.82	2.76	3.41	3.30	2.55	2.90	2.33	2.38	1.55
8	.94	1.04	1.39	1.77	2.73	3.12	2.90	2.53	2.30	2.15	2.29	1.85
9	.97	1.06	1.33	1.77	2.88	2.92	2.73	2.61	2.10	2.05	2.18	1.96
10	1.13	1.04	1.26	2.00	2.72	2.78	2.62	2.70	1.99	1.75	2.05	1.93
11	1.32	1.08	1.14	1.99	2.39	3.10	2.52	2.58	1.93	1.68	1.91	1.65
12	1.33	1.07	1.23	1.64	2.29	4.30	2.45	2.93	1.85	1.94	1.85	1.52
13	1.30	1.04	1.40	1.64	2.75	4.90	2.57	3.23	1.82	2.11	1.69	1.41
14	1.22	1.07	1.29	1.73	4.68	4.81	3.39	3.19	1.79	1.78	1.79	1.35
15	1.15	1.09	1.23	1.83	4.50	4.20	4.30	3.04	1.76	1.82	1.67	1.28
16	1.08	1.05	1.21	1.75	3.44	3.68	4.32	2.98	1.76	1.86	1.56	1.18
17	1.05	1.06	1.28	2.49	2.81	3.38	5.30	3.17	1.74	1.80	1.52	1.12
18	1.01	1.10	1.24	2.43	2.53	3.30	5.20	3.09	1.69	1.64	1.68	1.17
19	.98	1.09	1.27	2.16	2.67	3.15	4.75	2.85	1.61	1.53	1.73	1.20
20	.96	1.00	1.30	2.10	2.77	3.00	4.42	2.84	1.52	1.38	1.64	1.25
21	.94	1.10	1.27	2.22	2.42	2.92	4.08	3.83	1.53	1.31	1.55	1.58
22	.95	1.08	1.20	2.77	2.28	2.82	3.78	3.58	1.64	1.28	1.54	1.71
23	.98	1.06	1.18	3.51	2.17	2.94	3.50	3.50	1.73	1.26	1.48	1.61
24	1.04	1.06	1.18	2.95	2.09	3.18	3.22	3.23	1.84	1.25	1.59	1.59
25	.98	1.04	1.16	2.48	2.05	3.11	3.00	3.07	1.72	1.28	1.49	1.57
26	.97	1.01	1.19	2.45	2.11	3.03	2.79	2.78	1.63	1.22	1.37	1.66
27	.95	1.07	1.27	2.59	2.39	2.93	2.69	2.71	1.67	1.24	1.28	1.51
28	.94	1.09	2.05	2.42	2.70	2.80	2.89	2.55	1.73	1.45	1.30	1.35
29	.95	1.07	2.45	2.71	-------	2.68	5.20	2.45	1.89	1.40	1.32	1.31
30	.93	1.06	2.82	3.10	-------	2.55	4.30	2.36	2.10	1.89	1.24	1.22
31	.97	-------	2.08	3.10	-------	2.42	-------	2.20	-------	2.10	1.23	-------

Note.—Stage-discharge relation Dec. 12-28 affected by ice.

Daily discharge, in second-feet, of Raystown Branch Juniata River at Saxton, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	90	100	115	898	940	940	515	1,960	410	330	898	130
2	90	95	108	2,760	1,600	815	488	1,600	390	245	542	122
3	90	100	108	1,190	3,360	990	515	1,300	350	215	410	115
4	90	108	100	738	3,200	2,350	488	990	330	200	515	115
5	90	100	140	542	1,960	2,760	570	815	312	215	665	162
6	95	100	162	390	1,300	2,220	1,600	738	700	460	700	215
7	95	108	188	295	815	1,480	1,360	665	940	542	570	215
8	95	108	175	278	815	1,140	940	665	515	435	515	312
9	95	108	162	278	940	940	815	700	410	390	460	350
10	122	108	140	370	775	855	700	775	370	278	390	350
11	150	115	122	370	570	1,140	630	700	350	260	330	245
12	162	108	120	245	515	2,620	600	990	312	350	312	200
13	150	108	110	245	815	3,520	665	1,300	295	410	260	175
14	130	108	110	278	3,200	3,360	1,480	1,240	295	295	295	162
15	122	115	110	312	2,900	2,480	2,620	1,090	278	295	245	150
16	115	108	110	278	1,540	1,840	2,620	1,040	278	312	215	130
17	108	108	120	630	855	1,480	4,160	1,190	278	295	200	115
18	100	115	120	600	665	1,360	4,000	1,140	260	245	260	122
19	100	115	120	435	738	1,190	3,360	898	230	215	278	130
20	95	100	120	410	815	1,040	2,760	898	200	175	245	140
21	95	115	120	460	570	940	2,350	1,960	215	150	215	230
22	95	115	110	815	515	855	1,960	1,720	245	150	215	260
23	100	108	110	1,600	435	990	1,600	1,600	278	140	200	230
24	108	108	110	990	410	1,240	1,240	1,300	312	140	230	230
25	100	108	110	630	390	1,140	1,040	1,090	260	150	200	215
26	95	100	110	600	410	1,090	855	855	245	130	162	245
27	95	108	120	700	570	990	775	775	245	140	150	260
28	95	115	180	570	775	855	940	665	278	188	150	162
29	95	108	600	775	-------	775	4,000	600	330	175	150	150
30	95	108	855	1,140	-------	665	2,620	542	410	330	140	130
31	95	-------	390	1,140	-------	570	-------	460	-------	410	140	-------

Note.—Discharge Dec. 12-28 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Frankstown Branch Juniata River at Williamsburg.

Monthly discharge of Raystown Branch Juniata River at Saxton, for the year ending September 30, 1923.

(Drainage area, 790 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	162	90	105	0.133	0.15
November	115	95	108	.137	.15
December	855	100	173	.219	.25
January	2,760	245	676	.856	.99
February	3,360	390	1,160	1.47	1.53
March	3,520	570	1,440	1.82	2.10
April	4,160	488	1,610	2.04	2.28
May	1,960	460	1,040	1.32	1.52
June	940	200	344	.435	.49
July	542	130	267	.338	.39
August	898	140	331	.419	.48
September	350	115	190	.240	.27
The Year	4,160	90	616	.780	10.60

SUSQUEHANNA BASIN—STATION NO. 31

TUSCARORA CREEK NEAR PORT ROYAL

Location.—At single-span steel highway bridge about two miles southwest of Port Royal, Juniata County.

Drainage Area.—205 square miles.

Records Available.—August 21, 1911, to September 30, 1923.

Gage.—Standard chain attached to upstream side of bridge; read by Stuart Groninger.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are low but not subject to overflow except during extremely high stages. Bed is composed of gravel and rocks. Control is at a riffle about 500 feet below gage; practically permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 8.3 feet at 10 p. m. March 3 (discharge, 3,780 second-feet); minimum, 1.90 feet at 5 p. m. Sunday October 1, when a part of the stream flow was probably being stored at mill dams above gage, (discharge, 3.0 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Regulation.—The operation of grist mills above the station may cause variation in stage during low flows.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 15 and 5,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for extreme stages when they are fair.

Daily Mean Gage Height, in feet, of Tuscarora Creek near Port Royal, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.00	2.24	2.22	5.26	3.00	5.14	2.94	4.02	2.84	2.37	2.46	2.18
2	2.08	2.19	2.23	5.22	3.18	4.98	2.91	3.72	2.79	2.36	2.40	2.04
3	2.16	2.20	2.18	3.84	3.28	7.02	2.86	3.54	3.00	2.36	2.41	2.15
4	2.16	2.24	2.23	3.46	3.35	7.38	2.92	3.43	2.98	2.32	2.53	2.20
5	2.12	2.16	2.45	3.13	3.76	6.11	3.14	3.36	2.78	2.44	2.42	2.24
6	2.12	2.34	2.94	2.92	3.46	4.92	3.54	3.26	3.40	2.50	3.05	2.61
7	2.14	2.29	2.54	2.76	3.50	4.48	3.20	3.16	3.70	2.49	2.62	2.58
8	2.06	2.31	2.44	3.16	3.80	4.14	3.07	3.13	3.14	2.48	2.47	2.40
9	2.20	2.28	2.38	3.18	3.80	3.92	3.03	3.40	2.89	2.38	2.38	2.40
10	2.54	2.24	2.38	3.16	3.42	3.93	2.98	3.34	2.74	2.33	2.32	2.36
11	3.81	2.34	2.53	2.85	3.30	4.11	2.93	3.09	2.69	3.52	2.24	2.30
12	2.78	2.09	2.31	2.72	3.19	4.85	2.87	3.24	2.69	2.83	2.28	2.21
13	2.52	2.31	2.19	2.70	3.58	5.12	2.92	3.52	2.68	2.44	2.32	2.24
14	2.37	2.24	2.12	2.80	4.04	4.77	3.55	3.27	2.61	2.33	2.35	2.18
15	2.32	2.28	2.26	2.82	4.22	4.28	3.74	3.14	2.58	2.35	2.25	2.19
16	2.32	2.28	2.32	2.79	3.77	4.11	3.84	3.50	2.56	2.58	2.24	2.08
17	2.42	2.24	2.31	2.67	4.21	4.01	4.77	3.82	2.51	2.58	2.18	2.15
18	2.48	2.24	2.39	2.60	4.40	3.76	4.36	3.48	2.49	2.42	2.22	2.18
19	2.38	2.16	2.31	2.60	4.20	3.65	4.00	3.30	2.44	2.28	2.15	2.16
20	2.35	2.36	2.30	2.60	4.06	3.49	3.74	3.25	2.40	2.27	2.26	2.06
21	2.26	2.18	2.26	2.74	3.86	3.49	3.56	5.64	2.40	2.26	2.26	2.24
22	2.17	2.20	2.14	3.58	3.92	3.42	3.44	4.94	2.38	2.18	2.22	2.44
23	2.30	2.18	2.38	3.74	3.76	3.48	3.34	4.22	2.35	2.21	2.30	2.42
24	2.27	2.22	2.16	3.60	3.43	3.54	3.22	3.76	3.03	2.25	2.37	2.52
25	2.26	2.22	2.35	3.43	3.62	3.32	3.12	3.62	2.62	2.88	2.18	2.92
26	2.28	2.12	2.46	3.57	3.75	3.24	3.06	3.44	2.40	2.35	2.12	2.55
27	2.28	2.15	2.31	3.37	4.04	3.22	3.01	3.30	2.34	2.47	2.21	2.42
28	2.24	2.24	2.54	3.22	4.69	3.10	3.30	3.18	2.40	3.70	2.20	2.35
29	2.12	2.21	4.48	3.16	-------	3.06	5.38	3.09	2.60	2.86	2.20	2.30
30	2.28	2.24	3.79	3.02	-------	3.09	4.52	2.98	2.51	2.59	2.23	2.16
31	2.22	-------	3.30	2.84	-------	3.02	-------	2.90	-------	2.49	2.16	-------

NOTE.—Stage-discharge relation Jan. 8, 9, Feb. 19-23 and 25 affected by ice.

Daily discharge, in second-feet, of Tuscarora Creek near Port Royal, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10	32	30	1,140	140	1,020	128	425	110	46	56	26
2	16	27	31	1,080	180	950	122	315	101	45	49	13
3	24	28	26	368	205	2,480	113	270	140	45	50	23
4	24	32	31	242	368	2,350	124	242	130	40	65	28
5	20	24	55	170	332	1,720	170	218	100	54	51	32
6	20	42	128	124	242	890	270	192	230	61	150	74
7	22	37	66	97	255	670	180	170	315	60	76	71
8	15	39	54	85	350	488	150	170	170	59	57	49
9	28	36	47	120	350	385	150	230	118	47	47	49
10	66	32	47	170	230	405	138	218	93	41	40	45
11	350	42	65	112	205	465	126	160	86	255	32	38
12	100	17	39	90	180	835	115	192	86	108	36	29
13	63	39	27	87	285	1,020	124	255	84	54	40	32
14	46	32	20	103	445	835	270	192	74	41	44	26
15	40	36	34	106	510	560	332	170	71	44	33	27
16	40	36	40	101	332	465	368	255	68	71	32	16
17	51	32	39	83	510	425	835	350	62	71	26	23
18	59	32	48	73	615	332	588	255	60	51	30	26
19	47	24	39	73	320	300	425	205	54	36	23	24
20	44	45	38	78	240	255	332	192	49	35	34	15
21	34	26	34	93	220	255	270	1,340	49	34	34	32
22	25	28	22	235	220	230	242	890	47	26	30	54
23	38	26	47	332	220	255	218	510	44	29	38	51
24	35	30	24	285	242	270	180	332	150	33	46	63
25	34	30	44	242	260	205	160	285	76	117	26	124
26	36	20	56	270	332	192	150	242	49	44	20	67
27	36	23	39	218	445	180	140	205	42	57	29	51
28	32	32	66	180	780	160	205	180	49	315	28	44
29	20	29	670	170	-------	150	1,210	160	73	113	28	38
30	36	32	350	140	-------	160	670	136	62	72	31	24
31	30	-------	205	110	-------	140	-------	120	-------	60	24	-------

NOTE.—Discharge Jan. 8, 9, Feb. 19-23 and 25 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Raystown Branch Juniata River at Saxton.

Monthly discharge of Tuscarora Creek near Port Royal, for the year ending September 30, 1923.
(Drainage area, 205 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	350	10	46.5	0.227	0.26
November	45	17	31.3	.153	.17
December	670	20	79.4	.387	.45
January	1,140	73	220	1.07	1.23
February	780	140	322	1.57	1.64
March	2,850	140	631	3.08	3.55
April	1,210	113	284	1.39	1.55
May	1,340	120	293	1.43	1.65
June	315	42	94.9	.463	.52
July	315	26	69.8	.340	.39
August	150	20	42.1	.205	.24
September	124	13	40.5	.198	.22
The Year	2,850	10	179	.873	11.87

SUSQUEHANNA BASIN—STATION NO. 32

JUNIATA RIVER AT NEWPORT

Location.—At four-span steel highway bridge, Newport, Perry County.

Drainage Area.—3,380 square miles.

Records Available.—March 21, 1899, to July 14, 1906, and January 7, 1907, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by A. R. Bortel. Elevation of gage zero 363.32 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of hard material. Low-water control is at a riffle about 400 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 15.1 feet at 8 p. m. March 3 (discharge, 46,000 second-feet); minimum, 2.86 feet at 8 a. m. October 6, November 30 and at 5 p. m. December 3 (discharge, 422 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined below 10,000 second-feet and well defined from 10,000 to 70,000 second-feet. Gage read twice daily to hundredths October 1 to December 31, and to half tenths since that date; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

The following discharge measurement was made by H. J. McIntyre: No. 75, February 23: Gage height, 10.36 feet; Discharge, 3,100 second-feet. Measurement made under complete ice cover.

Daily Mean Gage Height, in feet, of Juniata River at Newport, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.90	2.87	2.97	4.50	8.73	11.13	4.15	5.68	4.00	3.27	3.87	3.30
2	3.00	2.96	2.96	6.04	8.80	11.33	4.12	5.22	4.08	3.29	3.77	3.37
3	2.97	3.03	2.84	5.33	8.45	13.47	4.02	4.90	3.92	3.15	3.80	3.21
4	2.91	2.94	2.94	4.95	8.79	11.83	4.10	4.65	3.90	3.23	3.73	3.21
5	2.94	2.99	3.09	4.27	12.25	10.10	4.10	4.45	3.68	3.30	3.55	3.10
6	2.93	2.99	3.11	4.05	12.72	8.72	4.58	4.33	3.80	3.40	4.35	3.58
7	3.00	2.97	3.56	3.85	13.60	7.15	4.88	4.20	4.02	3.37	4.75	4.62
8	3.05	2.91	3.41	3.90	12.97	6.08	4.60	4.18	4.22	3.40	4.43	3.97
9	3.08	3.00	3.13	3.60	13.05	5.62	4.40	4.32	4.08	3.33	4.00	3.77
10	3.19	3.06	3.02	3.85	13.20	5.12	4.30	4.45	3.88	3.27	3.90	3.55
11	3.54	3.05	3.15	3.85	12.45	5.20	4.28	4.40	3.80	3.37	3.77	3.45
12	4.24	3.03	3.08	3.85	12.15	5.92	4.12	4.35	3.50	4.03	3.37	3.47
13	3.55	2.99	3.01	3.75	11.85	7.45	4.12	4.92	3.58	3.47	3.70	3.45
14	3.14	3.03	3.00	3.75	12.20	7.58	4.18	5.92	3.60	3.35	3.37	3.35
15	2.94	2.87	3.01	3.77	12.77	6.95	4.50	5.25	3.48	3.37	3.65	3.40
16	3.10	3.01	3.08	3.73	13.17	6.28	4.70	5.05	3.42	3.47	3.57	3.43
17	3.17	3.01	3.17	3.60	12.10	5.95	5.60	5.22	3.38	3.40	3.50	3.13
18	3.12	3.05	3.15	3.63	11.20	5.72	6.65	5.38	3.40	3.40	3.37	3.09
19	3.14	3.00	3.21	3.95	10.80	5.42	6.55	4.95	3.25	3.33	3.40	3.06
20	3.06	2.97	3.34	3.95	10.60	5.20	6.10	4.80	3.25	3.33	3.21	3.06
21	3.11	3.05	3.17	3.93	10.45	5.02	5.68	5.67	3.27	3.27	3.21	3.08
22	3.05	2.86	3.27	3.93	10.45	4.90	5.32	7.50	3.27	3.13	3.43	3.21
23	3.30	2.90	3.22	4.37	10.20	4.80	5.08	6.48	3.33	3.12	3.43	3.27
24	3.15	2.93	3.36	4.40	9.92	4.98	4.90	5.65	3.30	3.17	3.37	3.25
25	2.93	2.94	3.45	4.23	9.82	4.98	4.68	5.38	3.27	3.15	3.35	3.43
26	3.03	2.96	3.35	5.34	9.75	4.82	4.45	5.05	3.17	3.27	3.21	3.35
27	3.06	2.91	3.29	4.97	9.48	4.85	4.35	4.82	3.25	3.25	3.19	3.21
28	3.21	2.95	3.53	5.33	10.25	4.70	4.38	4.55	3.27	3.46	3.33	3.11
29	3.03	2.86	3.70	5.80	-------	4.58	4.95	4.45	3.27	4.73	3.21	3.20
30	3.01	2.89	4.30	5.87	-------	4.35	5.52	4.35	3.25	4.73	3.31	3.09
31	3.02	-------	4.25	7.47	-------	4.15	-------	4.12	-------	4.03	3.37	-------

NOTE.—Stage-discharge relation Dec. 11-29, 31, Jan. 8, 11-16, 18-22 and Jan. 26 to Mar. 3 affected by ice.

Daily discharge, in second feet, of Juniata River at Newport, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	470	434	561	4,020	3,200	4,000	3,020	7,760	2,620	1,030	2,250	1,080
2	600	548	548	8,720	4,400	3,800	2,880	6,170	2,880	1,060	2,020	1,210
3	561	642	398	6,480	10,000	24,000	2,620	5,240	2,370	820	2,130	918
4	483	522	522	5,550	12,000	31,000	2,880	4,320	2,370	954	2,020	918
5	522	587	726	3,290	8,500	23,800	2,880	3,870	1,900	1,080	1,580	740
6	509	587	756	2,750	4,000	18,300	4,320	3,720	2,130	1,270	3,580	1,680
7	600	561	1,580	2,250	3,200	12,800	5,240	3,150	2,620	1,210	4,930	4,320
8	670	483	1,290	1,900	3,400	9,040	4,320	3,150	3,150	1,270	3,870	2,500
9	712	600	788	1,680	3,800	7,440	3,720	3,430	2,880	1,140	2,620	2,020
10	884	684	628	2,250	3,400	5,860	3,430	3,870	2,370	1,030	2,370	1,580
11	1,580	670	550	1,500	2,600	6,170	3,430	3,720	2,130	1,210	2,020	1,370
12	3,290	642	460	1,000	2,200	8,400	2,880	3,580	1,470	2,750	1,790	1,410
13	1,580	587	460	750	1,900	13,500	2,880	5,240	1,680	1,410	1,900	1,370
14	804	642	460	800	3,200	14,300	3,150	8,400	1,680	1,180	1,210	1,180
15	522	434	550	900	13,000	12,100	4,020	6,170	1,430	1,210	1,790	1,270
16	740	614	550	1,300	11,000	9,690	4,020	5,550	1,310	1,410	1,580	1,330
17	852	614	600	1,680	6,000	8,720	7,440	6,170	1,230	1,270	1,470	788
18	772	670	600	1,500	2,800	7,760	10,700	6,800	1,270	1,270	1,210	726
19	804	600	550	900	2,400	6,800	10,700	5,550	990	1,140	1,270	684
20	684	561	460	750	2,600	6,170	9,040	4,930	990	1,140	918	684
21	756	670	460	1,000	3,000	5,550	7,760	7,760	1,030	1,030	918	712
22	670	422	460	1,700	2,600	5,240	6,480	13,900	1,030	788	1,330	918
23	1,030	470	460	3,580	1,800	4,930	5,860	10,400	1,140	772	1,330	1,030
24	820	509	460	3,720	1,500	5,550	5,240	7,440	1,080	852	1,210	990
25	509	522	460	3,290	1,500	5,550	4,620	6,800	1,030	820	1,180	1,330
26	642	548	460	2,600	1,700	4,930	3,870	5,550	852	1,030	918	1,180
27	684	483	550	2,200	3,200	4,930	3,580	4,930	990	990	884	918
28	918	535	650	2,400	4,400	4,620	3,720	4,320	1,030	1,390	1,140	756
29	642	422	1,200	4,000	-------	4,320	5,550	3,870	1,030	4,620	918	900
30	614	458	3,430	4,400	-------	3,580	7,120	3,580	990	4,620	1,100	726
31	628	-------	2,000	3,800	-------	3,020	-------	2,880	-------	2,750	1,210	-------

NOTE.—Discharge Dec. 11-29, 31, Jan. 8, 11-16, 18-22 and Jan. 26 to Mar. 3 estimated, because of ice, from discharge measurement, weather records, study of gage height graph and comparison with similar studies for Frankstown Branch Juniata River at Williamsburg and Huntingdon, Raystown Branch Juniata River at Saxton and Susquehanna River at Harrisburg.

Monthly discharge of Juniata River at Newport, for the year ending September 30, 1923.
(Drainage area, 3,380 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	3,290	470	826	0.244	0.28
November	684	422	557	.165	.18
December	3,430	398	762	.225	.26
January	8,720	750	2,670	.790	.91
February	13,000	1,500	4,400	1.30	1.35
March	31,000	3,020	9,220	2.73	3.15
April	10,700	2,620	4,930	1.46	1.63
May	13,900	2,880	5,550	1.64	1.89
June	3,150	852	1,660	.491	.55
July	4,620	772	1,440	.426	.49
August	4,930	884	1,760	.521	.60
September	4,320	684	1,240	.367	.41
The Year	31,000	398	2,920	.864	11.70

SUSQUEHANNA BASIN—STATION NO. 33

SUSQUEHANNA RIVER AT HARRISBURG

Location.—At fifteen-span steel highway bridge, Walnut Street, Harrisburg, Dauphin County.

Drainage Area.—24,100 square miles.

Records Available.—January 1, 1891, to September 30, 1923.

Gages.—Standard chain attached to upstream side of bridge; read by employes of the Department of Forests and Waters. Elevation of gage zero 289.4 feet, United States Geological Survey datum. Sanborn water-stage recorder is located on top, downstream corner, of left abutment and referred to same datum as chain gage.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of gravel and boulders. A low dam 4,200 feet below the gage, completed on August 29, 1916, is the control for all except high stages.

Extremes of Discharge.—Maximum stage during the year, 14.78 feet observed at 7.15 a. m. March 6 (discharge, 259,000 second-feet); minimum, 3.10 feet on July 24, at 7.15 a. m. July 28 and at 1 p. m. August 27 (discharge, 3,100 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.— Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 4,000 and 300,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height, computed from a continuous daily hydrograph obtained by plotting chain gage readings in connection with water-stage recorder graph, to rating table. Results good.

Daily Mean Gage Height, in feet, of Susquehanna River at Harrisburg, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.18	3.26	3.19	4.00	4.80	6.61	5.44	5.11	4.39	3.40	4.04	3.35
2	3.16	3.22	3.19	5.39	4.96	6.85	5.18	5.24	4.29	3.40	3.89	3.33
3	3.16	3.22	3.19	6.15	5.05	7.32	5.03	5.30	4.19	3.40	3.76	3.30
4	3.14	3.22	3.18	6.37	5.27	10.98	4.98	5.10	4.12	3.37	3.80	3.28
5	3.12	3.20	3.21	6.20	7.25	11.31	4.90	4.92	4.04	3.32	3.86	3.28
6	3.11	3.20	3.28	5.67	8.67	14.29	5.26	4.77	4.08	3.34	3.79	3.43
7	3.11	3.20	3.31	5.25	9.18	11.30	7.34	4.58	4.06	3.38	3.86	3.62
8	3.13	3.20	3.50	5.07	8.40	9.02	8.70	4.52	4.00	3.36	3.79	3.56
9	3.15	3.20	3.53	4.90	8.15	7.58	7.95	4.52	3.99	3.32	3.69	3.48
10	3.31	3.19	3.50	4.57	8.00	6.71	7.05	4.75	4.22	3.31	3.56	3.46
11	3.41	3.20	3.58	4.47	7.89	6.32	6.50	5.18	4.21	3.35	3.54	3.48
12	3.60	3.21	3.86	4.32	7.80	6.30	6.04	5.43	4.22	3.46	3.49	3.49
13	3.52	3.20	3.94	4.22	7.46	7.02	5.72	5.95	4.23	3.45	3.40	3.49
14	3.48	3.20	3.62	4.51	7.35	7.83	5.52	8.48	4.12	3.38	3.39	3.47
15	3.45	3.22	3.68	4.42	6.72	8.40	5.37	8.46	4.02	3.32	3.31	3.39
16	3.39	3.21	3.53	4.18	6.72	7.54	5.26	7.30	3.95	3.38	3.37	3.36
17	3.39	3.25	3.50	4.16	7.10	7.58	5.21	6.73	3.85	3.40	3.30	3.34
18	3.40	3.23	3.45	4.38	7.05	9.20	5.30	6.95	3.79	3.28	3.27	3.29
19	3.38	3.22	3.45	4.48	6.62	9.50	5.25	7.01	3.72	3.25	3.22	3.24
20	3.34	3.21	3.25	4.50	6.54	8.88	5.07	6.51	3.66	3.20	3.20	3.20
21	3.30	3.20	3.20	4.93	6.48	8.32	4.96	6.25	3.61	3.18	3.18	3.28
22	3.28	3.24	3.35	5.39	6.37	7.46	4.84	6.54	3.59	3.15	3.16	3.36
23	3.23	3.22	3.44	5.67	6.42	6.94	4.74	6.85	3.58	3.12	3.20	3.68
24	3.19	3.21	3.43	5.29	6.25	7.35	4.60	6.49	3.55	3.10	3.20	3.76
25	3.20	3.21	3.43	6.30	6.05	9.18	4.51	5.98	3.54	3.14	3.18	3.79
26	3.20	3.22	3.46	6.05	6.05	9.30	4.40	5.64	3.49	3.12	3.14	3.76
27	3.20	3.22	3.49	5.92	6.19	8.32	4.38	5.33	3.46	3.12	3.10	3.64
28	3.22	3.20	3.55	5.73	6.25	7.35	4.31	5.08	3.42	3.16	3.11	3.58
29	3.22	3.20	3.63	5.50	-------	6.68	4.47	4.86	3.42	4.35	3.17	3.59
30	3.22	3.19	3.71	5.25	-------	6.13	4.79	4.74	3.40	5.12	3.30	3.58
31	3.24	-------	3.83	4.99	-------	5.72	-------	4.55	-------	4.56	3.33	-------

Note.—Stage-discharge relation Dec. 12-19 and Dec. 22 to Mar. 5 affected by ice.

Daily discharge, in second-feet, of Susquehanna River at Harrisburg, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,900	4,730	4,000	11,000	18,000	22,000	36,900	31,200	19,100	6,200	14,000	5,680
2	3,700	4,310	4,000	16,000	18,000	26,000	33,100	33,100	17,600	6,200	12,000	5,460
3	3,700	4,310	4,000	40,000	18,000	34,000	29,400	35,000	16,100	6,200	10,900	5,150
4	3,500	4,310	3,900	48,000	19,000	50,000	29,400	31,200	14,700	5,880	10,800	4,940
5	3,300	4,100	4,200	46,000	20,000	120,000	27,600	27,600	14,000	5,300	11,400	4,940
6	3,200	4,100	4,940	36,000	24,000	245,000	35,000	25,800	14,700	5,570	10,800	6,530
7	3,200	4,100	5,260	30,000	26,000	166,000	77,000	22,800	14,000	5,990	11,400	8,400
8	3,400	4,100	7,300	26,000	24,000	114,000	107,000	20,700	13,300	5,780	10,800	7,850
9	3,600	4,100	7,850	22,000	22,000	83,500	92,100	20,700	13,300	5,360	9,600	7,080
10	5,260	4,000	7,300	19,000	20,000	64,200	70,600	25,800	16,100	5,260	7,850	6,860
11	6,310	4,100	8,400	16,000	20,000	55,600	59,800	33,100	16,100	5,680	7,850	7,080
12	8,400	4,200	7,500	15,000	20,000	55,600	49,300	36,900	16,100	6,860	7,190	7,190
13	7,300	4,100	7,000	12,000	22,000	70,600	43,000	49,300	16,800	6,750	6,200	7,190
14	7,080	4,100	6,000	9,500	22,000	87,800	38,900	103,000	14,700	5,990	6,100	6,970
15	6,750	4,310	5,500	7,500	18,000	101,000	36,900	103,000	13,300	5,300	5,260	6,100
16	6,100	4,200	5,000	6,000	15,000	81,400	35,000	77,000	12,700	5,990	5,880	5,780
17	6,100	4,620	4,600	5,500	18,000	83,500	33,100	64,200	11,400	6,200	5,150	5,570
18	6,200	4,420	4,600	6,000	18,000	118,000	35,000	70,600	10,800	4,940	4,840	5,040
19	5,990	4,310	4,000	7,000	16,000	125,000	33,100	70,600	9,600	4,620	4,310	4,520
20	5,570	4,200	4,620	8,500	15,000	112,000	31,200	59,800	9,000	4,100	4,100	4,100
21	5,150	4,100	4,100	11,000	14,000	98,600	29,400	53,500	8,400	3,900	3,900	4,940
22	4,940	4,520	3,600	13,000	13,000	81,400	25,800	59,800	8,400	3,600	3,700	5,780
23	4,420	4,310	4,000	18,000	13,000	68,400	24,000	66,300	8,400	3,300	4,100	9,600
24	4,000	4,200	4,600	22,000	13,000	79,200	22,300	59,800	7,850	3,100	4,100	10,200
25	4,100	4,200	5,000	26,000	13,000	118,000	20,700	49,300	7,850	3,500	3,900	10,800
26	4,100	4,310	5,000	30,000	15,000	120,000	19,100	40,900	7,190	3,300	3,500	10,200
27	4,100	4,310	5,500	30,000	16,000	98,600	19,100	35,000	6,860	3,300	3,100	9,000
28	4,310	4,100	6,000	26,000	19,000	79,200	17,600	31,200	6,420	3,700	3,000	8,400
29	4,310	4,100	7,000	22,000	-------	64,200	19,900	27,600	6,420	18,300	3,800	8,400
30	4,310	4,000	7,500	20,000	-------	51,400	25,800	24,000	6,200	31,200	5,150	8,400
31	4,520	-------	8,500	18,000	-------	43,000	-------	22,300	-------	22,300	5,460	-------

Note.—Discharge Dec. 12-19 and Dec. 22 to Mar. 5 estimated, because of ice, from weather records, study of gage height graph and comparison with discharge of Susquehanna River at Holtwood.

Monthly discharge of Susquehanna River at Harrisburg, for the year ending September 30, 1923.
(Drainage area, 24,100 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	8,400	3 200	4,860	0.202	0.23
November	4,730	4 000	4,230	.176	.20
December	8,500	3 600	5,510	.229	.26
January	48,000	5 500	20,100	.834	.96
February	26,000	13 000	18,200	.775	.81
March	245,000	22 000	87,700	3.64	4.20
April	107,000	17 600	38,600	1.60	1.78
May	103,000	20 700	45,500	1.89	2.18
June	19,100	6 200	11,900	.494	.55
July	31,200	3 100	6,900	.286	.33
August	14,000	3 100	6,760	.280	.32
September	10,800	4 100	6,940	.288	.32
The Year	245,000	3 100	21,500	.892	12.14

SUSQUEHANNA BASIN—STATION NO. 34

LITTLE SWATARA CREEK NEAR PINE GROVE

Location.—At single-span steel highway bridge, about three-quarters of a mile upstream from the mouth of creek and one mile southeast of Pine Grove, Schuylkill County.

Drainage Area.—34 square miles.

Records Available.—November 18, 1919. to September 30, 1923.

Gage.—Standard chain attached to upstream side of bridge; read by Miss Lottie Mars.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Both banks are of medium height; overflow begins at a stage of about 6 feet. Bed is composed of coarse gravel. Control is at a riffle, at the upstream end of an island, about 100 feet below gage. Bed at control is coarse gravel; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 7.0 feet at 7 p. m. March 3 (discharge, about 1,260 second-feet); minimum, 0.90 foot at 6 p. m. August 16 (discharge, 2.0 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 500 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Cooperation.— Station was maintained in cooperation with J. C. White Management Corporation, New York City, until December 31, 1922.

Discharge measurements of Little Swatara Creek near Pine Grove, during the year ending September 30, 1923.

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.ft.
18	Oct. 3a	H. J. McIntyre	1.11	4.38
19	3b	do	1.11	4.13

a Measurement made by wading 100 feet above gage.
b Measurement made by wading 150 feet below gage.

Daily Mean Gage Height, in feet, of Little Swatara Creek near Pine Grove, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.07	1.22	1.20	3.52	1.76	2.76	1.69	1.58	1.56	1.22	1.18	1.02
2	1.07	1.24	1.18	2.38	1.57	2.78	1.67	1.58	1.54	1.19	1.13	1.00
3	1.05	-------	1.16	2.08	1.74	4.62	1.68	1.56	1.51	1.17	1.22	1.00
4	1.04	-------	1.20	1.96	1.75	3.31	1.74	1.54	1.49	1.19	1.26	1.00
5	1.08	-------	1.53	1.80	1.98	2.92	1.91	1.52	1.45	1.20	1.24	1.04
6	1.06	1.24	1.36	1.74	2.00	2.49	2.05	1.53	1.41	1.17	1.12	1.46
7	1.08	1.32	1.39	1.71	2.26	2.33	1.94	1.50	1.41	1.15	1.10	1.21
8	1.46	1.30	1.34	1.72	2.18	2.16	1.97	1.47	1.38	1.13	1.08	1.21
9	1.42	1.21	1.40	1.66	2.04	2.01	1.88	1.80	1.38	1.11	1.10	1.16
10	2.89	1.22	1.32	1.68	2.02	2.01	1.84	1.67	1.35	1.11	1.04	1.08
11	1.95	1.20	1.42	1.67	1.94	2.05	1.82	1.64	1.37	1.25	1.02	1.07
12	1.68	1.18	1.38	1.99	1.87	2.75	1.76	1.67	1.33	1.19	1.04	1.02
13	1.56	1.20	1.40	1.94	2.10	2.83	1.74	1.90	1.33	1.14	.95	1.04
14	1.39	1.20	1.40	1.94	2.23	2.62	1.76	1.71	1.33	1.13	.97	1.04
15	1.47	1.28	1.38	2.18	2.44	2.40	1.74	1.71	1.28	1.11	1.02	1.02
16	1.38	1.28	1.38	1.83	2.31	2.94	1.70	1.71	1.27	1.15	.92	1.01
17	1.38	1.28	1.49	1.69	2.20	2.92	1.68	1.78	1.25	1.15	.94	1.00
18	1.40	1.19	1.63	1.83	2.09	2.64	1.64	1.70	1.25	1.09	1.00	1.03
19	1.32	1.19	1.48	1.89	2.12	2.46	1.66	1.68	1.23	1.07	1.01	1.06
20	1.32	1.17	1.40	1.81	2.14	2.26	1.60	1.70	1.25	1.05	1.01	1.62
21	1.32	1.18	1.57	2.33	2.22	2.19	1.59	2.49	1.24	1.05	.98	2.28
22	1.28	1.16	1.48	3.14	2.23	2.10	1.58	2.27	1.23	1.03	1.25	1.90
23	1.28	1.18	1.50	2.83	2.25	2.12	1.55	2.07	1.21	1.03	1.10	2.22
24	1.39	1.19	1.48	2.07	2.07	2.09	1.59	1.95	1.21	1.07	1.04	2.00
25	1.28	1.15	1.51	2.00	2.20	1.94	1.48	1.85	1.41	1.30	1.00	1.78
26	1.31	1.21	1.59	1.84	2.18	1.92	1.48	1.84	1.25	1.12	1.02	1.68
27	1.30	1.14	1.62	1.76	2.40	1.84	1.48	1.77	1.23	1.10	1.00	1.54
28	1.24	1.16	2.31	1.74	2.74	1.82	1.50	1.78	1.25	1.12	1.23	1.52
29	1.24	1.16	3.16	1.72	-------	1.76	1.75	1.62	1.28	1.15	1.12	1.46
30	1.25	1.16	2.58	1.62	-------	1.78	1.61	1.59	1.25	1.14	1.07	1.39
31	1.21	-------	2.24	1.74	-------	1.79	-------	1.61	-------	1.24	1.04	-------

Note.—Gage height Nov. 3-5 not observed. Stage-discharge relation Dec. 13 to Jan. 1, Jan. 12-17, 20-23 and Feb. 19 to Mar. 3 affected by ice.

Daily discharge, in second-feet, of Little Swatara Creek near Pine Grove, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.6	6.6	6.1	180	43	200	35	26	24	6.6	5.6	2.9
2	3.6	7.1	5.6	157	25	220	33	26	23	5.8	4.6	2.7
3	3.3	7	5.2	92	41	340	34	24	21	5.4	6.6	2.7
4	3.1	7	6.1	72	42	369	41	23	19	5.8	7.7	2.7
5	3.7	7	22	48	75	274	64	21	17	6.1	7.1	3.1
6	3.4	7.1	12	41	78	181	87	22	15	5.4	4.4	18
7	3.7	10	13	37	130	146	68	20	15	5.0	4.0	6.3
8	18	9.1	11	38	113	109	73	18	13	4.6	3.7	6.2
9	15	6.3	14	32	85	80	59	48	13	4.2	4.0	5.2
10	274	6.6	10	34	82	80	54	33	11	4.2	3.1	3.7
11	70	6.1	15	33	68	87	51	31	12	7.4	2.9	3.6
12	34	5.6	13	28	52	240	43	33	10	5.8	3.1	2.9
13	24	6.1	11	20	96	262	41	62	10	4.8	2.3	3.1
14	13	6.1	9	14	124	205	43	37	10	4.6	2.5	3.1
15	18	8.4	7	14	170	161	41	37	8.4	4.2	2.9	2.9
16	13	8.4	6	18	141	286	36	37	8.0	5.0	2.1	2.8
17	13	8.4	6	28	117	274	34	46	7.4	5.0	2.2	2.7
18	14	5.8	7	52	94	216	31	36	7.4	3.9	2.7	3.0
19	10	5.8	6	61	55	174	32	34	6.8	3.6	2.8	3.4
20	10	5.4	6	36	28	130	27	36	7.4	3.3	2.8	29
21	10	5.6	6	48	30	115	26	181	7.1	3.3	2.5	135
22	8.4	5.2	7	95	30	96	26	132	6.8	3.0	7.4	62
23	8.4	5.6	7	95	28	100	24	91	6.3	3.0	4.0	121
24	13	5.8	6	91	24	94	26	70	6.3	3.6	3.1	78
25	8.4	5.0	6	78	24	68	19	55	15	9.1	2.7	46
26	9.5	6.3	7	54	32	65	19	54	7.4	4.4	2.9	34
27	9.1	4.8	9	43	80	54	19	44	6.8	4.0	2.7	23
28	7.1	5.2	32	41	170	51	20	40	7.4	4.4	6.8	21
29	7.1	5.2	80	38	-------	43	42	29	8.4	5.0	4.4	18
30	7.4	5.2	48	29	-------	46	28	26	7.4	4.8	3.6	13
31	6.3	-------	36	41	-------	47	-------	28	-------	7.1	3.1	-------

Note.—Discharge estimated, Nov. 3-5, because of no gage height record; Dec. 13 to Jan. 1, Jan. 12-17, 20-23 and Feb. 19 to Mar. 3, because of ice, from weather records, study of gage height graph and comparison with similar studies for Swatara Creek at Harpers.

Monthly discharge of Little Swatara Creek near Pine Grove, for the year ending September 30, 1923.

(Drainage area, 34 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	274	3.1	20.8	0.612	0.71
November	10	4.8	6.46	.190	.21
December	80	5.2	14.0	.412	.48
January	180	14	54.5	1.60	1.84
February	170	24	74.2	2.18	2.27
March	369	43	155	4.56	5.26
April	87	19	39.2	1.15	1.28
May	181	18	45.2	1.33	1.53
June	24	6.3	11.2	.329	.37
July	9.1	3.0	4.92	.145	.17
August	7.7	2.1	3.88	.114	.13
September	135	2.7	22.0	.647	.72
The Year	369	2.1	37.5	1.10	14.97

SWATARA CREEK AT HARPERS

Location.—At two-span steel highway bridge, Harpers, Lebanon County, about five miles northwest of Annville.

Drainage Area.— 334 square miles.

Records Available.—December 17, 1918, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by Elmer G. Shuey.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—At low and medium stages, the stream flows under the left span of the bridge. There is a flood plane under the right span which is covered by water during high stages. Outside of the flood plane both banks are high and do not overflow. Bed is composed of culm and gravel. Control is at a riffle about 300 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 6.7 feet at 8 p. m. January 1 (discharge, 3,930 second-feet); minimum, 0.26 foot at 7.35 a. m. July 23 (discharge, 22 second-feet); a stage of 0.23 foot was observed at 4.25 p. m. October 3 and at 4.45 p. m. October 4 but the discharge was more than on July 23, due to change in rating.

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation changed at noon October 26, 1922, when stones were removed from the creek, a short distance upstream from the gage weight; also affected by ice. Two rating curves used; the first applicable to noon of October 26, well defined below 500 second-feet and fairly well defined between 500 and 6,000 second-feet; the second applicable since noon of October 26, well defined below 200 second-feet and fairly well defined from 200 to 6,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of Swatara Creek at Harpers, during the year ending September 30, 1923.

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.ft.
20	Oct. 6a	J. M. Snavely	.32	49.0
21	26b	do	.37	58.9
22	Nov. 19a	R. H. Hosmer	.38	51.5

a Measurement made by wading 300 feet above gage.
b Measurement made by wading 300 feet above gage. Gage height for measurement, after stones were removed, 0.44 foot.

Daily Mean Gage Height, in feet, of Swatara Creek at Harpers, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.26	0.42	0.36	4.08	2.26	4.54	1.48	1.16	1.18	0.44	0.75	0.32
2	.24	.38	.36	3.63	2.84	4.48	1.50	1.06	1.16	.40	.50	.33
3	.26	.40	.36	2.38	3.02	6.17	1.44	.98	1.08	.42	.44	.29
4	.24	.39	.32	2.01	2.67	5.47	1.48	.94	1.12	.44	.80	.30
5	.24	.40	.68	1.65	2.00	5.17	1.82	.91	1.08	.42	.65	.36
6	.26	.40	.71	1.38	1.78	3.96	2.84	.94	.98	.44	.60	.86
7	.37	.41	.42	1.18	1.71	3.38	2.04	.92	.90	.42	.45	.70
8	.66	.40	.50	.88	1.99	2.98	1.84	.96	.86	.42	.40	.64
9	.79	.40	.60	1.34	1.84	2.62	1.79	1.66	.78	.36	.40	.68
10	2.67	.39	.54	1.18	1.87	2.58	1.68	1.69	.74	.36	.38	.50
11	2.33	.38	.52	.98	1.63	2.72	1.57	1.37	.72	.38	.35	.42
12	1.13	.38	.48	1.08	1.65	4.52	1.45	1.38	.73	.44	.34	.40
13	.76	.36	.53	.86	1.77	4.83	1.46	1.79	.71	.36	.38	.38
14	.62	.38	.40	.72	2.38	4.72	1.70	1.65	.66	.36	.35	.34
15	.51	.38	.41	.81	1.88	3.88	1.60	1.48	.63	.33	.34	.30
16	.48	.42	.40	1.28	1.80	4.65	1.51	1.55	.60	.36	.32	.34
17	.48	.43	.42	1.73	1.72	5.39	1.37	1.94	.56	.42	.32	.28
18	.44	.40	.42	1.50	1.48	4.30	1.32	1.52	.54	.36	.30	.31
19	.38	.40	.67	1.37	1.32	3.75	1.22	1.38	.52	.37	.28	.30
20	.34	.36	.58	1.12	1.26	3.35	1.22	1.32	.50	.36	.40	.42
21	.34	.38	.42	1.17	1.26	3.06	1.14	3.34	.50	.30	.37	2.83
22	.30	.38	.47	2.74	1.28	2.96	1.10	3.54	.48	.28	.41	3.42
23	.30	.38	.44	2.54	1.25	2.84	1.11	2.78	.46	.27	.47	3.02
24	.39	.36	.38	2.65	1.20	2.60	1.06	2.38	.48	.34	.36	3.00
25	.39	.36	.38	3.33	1.11	2.38	.98	2.18	.89	.54	.38	2.02
26	.40	.38	.43	2.65	1.35	2.26	.97	1.98	.75	.54	.32	1.56
27	.44	.36	.43	2.21	1.78	2.08	.88	1.81	.50	.39	.30	1.27
28	.40	.38	1.44	3.23	3.62	1.94	.94	1.64	.50	.38	.73	1.12
29	.37	.40	2.52	3.63	-------	1.66	1.49	1.52	.53	.40	.56	.91
30	.38	.36	1.76	2.93	-------	1.72	1.46	1.38	.52	1.09	.44	.82
31	.41	-------	1.44	2.38	-------	1.62	-------	1.30	-------	2.09	.33	-------

Note.—Stage-discharge relation Dec. 13, 19, 20, Jan. 28 to Feb. 6 and Feb. 10 affected by ice.

Daily discharge, in second-feet, of Swatara Creek at Harpers, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	36	57	43	1,780	220	2,060	362	242	258	61	134	34
2	32	48	43	1,430	220	2,060	362	212	242	52	75	37
3	36	52	43	745	240	3,480	344	193	227	57	61	28
4	32	50	34	560	280	2,850	362	182	227	61	146	30
5	32	52	117	420	320	2,610	480	175	227	57	110	43
6	36	52	124	325	400	1,710	945	182	193	61	98	162
7	61	54	57	258	440	1,200	560	177	172	57	64	122
8	130	52	75	167	560	1,050	500	188	162	57	52	108
9	162	52	98	308	500	845	480	420	141	43	52	117
10	895	50	84	258	440	845	440	440	132	43	48	75
11	695	48	80	193	420	895	381	308	127	48	41	57
12	255	48	70	227	420	2,060	344	325	129	61	39	52
13	155	43	65	162	460	2,290	344	480	124	43	48	48
14	120	48	52	127	745	2,210	440	420	112	43	41	39
15	93	48	54	149	520	1,640	400	362	105	37	39	30
16	86	57	52	291	480	2,130	362	381	98	43	34	39
17	86	59	57	460	440	2,770	308	540	89	57	34	26
18	77	52	57	362	362	1,920	291	362	84	43	30	32
19	63	52	50	308	291	1,570	258	325	80	45	26	30
20	54	43	50	227	274	1,290	258	291	75	43	52	57
21	54	48	57	242	274	1,110	242	1,230	75	30	45	945
22	45	48	68	895	291	1,050	227	1,360	70	26	54	1,290
23	45	48	61	795	274	945	227	945	66	24	68	1,050
24	66	43	48	345	258	845	212	745	70	39	43	1,050
25	66	43	48	1,230	227	745	193	650	169	84	48	560
26	59	48	59	845	308	695	190	560	134	84	34	331
27	61	43	59	650	480	605	167	480	75	50	30	274
28	52	48	344	480	1,430	540	182	420	75	48	129	227
29	45	52	795	320	-------	420	362	362	82	52	89	175
30	48	43	460	260	-------	440	344	325	80	227	61	151
31	54	-------	344	240	-------	400	-------	291	-------	605	37	-------

Note.—Discharge Dec. 13, 19, 20, Jan. 28 to Feb. 6 and Feb. 10 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Little Swatara Creek near Pine Grove.

Monthly discharge of Swatara Creek at Harpers, for the year ending September 30, 1923.
(Drainage area, 334 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	895	32	120	0.359	0.41
November	59	43	49.4	.148	.17
December	795	34	118	.353	.41
January	1,780	127	502	1.50	1.73
February	1,430	220	413	1.24	1.29
March	3,480	400	1,460	4.37	5.04
April	945	167	352	1.05	1.17
May	1,360	175	438	1.31	1.51
June	258	66	130	.389	.43
July	605	24	73.6	.220	.25
August	146	26	60.1	.180	.21
September	1,290	26	242	.725	.81
The Year	3,480	24	331	.991	13.43

SUSQUEHANNA BASIN—STATION NO. 36

CODORUS CREEK AT YORK

Location.—At three-span steel highway bridge, South Penn Street, York, York County.

Drainage Area.—221 square miles.

Records Available.—October 7, 1915, to August 31, 1923, when the station was discontinued.

Gage.—Standard chain attached to downstream side of bridge; read to hundredths twice daily by Thomas F. Heberly. Elevation of gage zero 351.79 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of mud and gravel. The Loucks Mill Dam, located about one and one half miles below gage, is control for medium, high and probably low stages when the water surface at dam is not below the crest elevation. During low stages, when the water surface is below the crest of dam, the station control is probably at a riffle about 800 feet below the gage. Stage-discharge relation variable during low stages on account of operations at Loucks Mill.

Extremes of Stage.—Maximum gage height during the period October 1 to August 3, 13.05 feet observed at 2 a. m. July 31; minimum 0.32 foot at 8 a. m. October 4, November 29 and December 2.

Ice.—Stage-discharge relation rarely affected by ice.

Daily Mean Gage Height, in feet, of Codorus Creek at York, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.09	0.58	1.06	2.12	2.33	1.92	2.02	2.01	1.41	1.75	1.80	-------
2	1.08	.52	.46	1.88	2.07	1.98	2.08	1.96	1.39	1.53	1.58	-------
3	.78	.63	1.21	1.91	2.34	1.79	2.00	1.88	1.94	1.22	1.58	-------
4	.40	.72	1.26	1.50	2.93	2.07	1.75	1.81	1.79	1.47	-------	-------
5	.52	1.14	1.16	1.00	2.08	2.01	2.18	1.97	1.42	1.30	-------	-------
6	.70	.89	1.28	1.22	2.02	1.80	2.63	1.86	1.40	1.81	-------	-------
7	.96	.99	1.21	1.19	1.34	1.82	2.11	1.70	1.40	1.42	-------	-------
8	1.14	1.29	1.05	1.75	2.02	1.71	2.15	1.78	1.43	1.88	-------	-------
9	1.18	1.24	1.21	2.21	2.52	1.67	2.04	2.29	1.38	1.63	-------	-------
10	2.54	1.03	1.33	1.80	2.20	1.75	1.91	1.98	1.61	1.39	-------	-------
11	2.17	1.09	1.30	1.51	2.32	1.94	1.78	1.80	1.54	1.53	-------	-------
12	1.86	1.27	.61	1.29	2.38	2.97	1.71	1.78	1.70	2.36	-------	-------
13	1.83	1.20	.91	1.50	4.40	3.23	1.81	1.81	1.74	1.42	-------	-------
14	1.66	.96	1.05	1.94	4.23	2.82	2.25	1.62	1.65	1.34	-------	-------
15	1.76	1.32	1.06	1.60	2.90	2.10	2.30	1.67	1.62	1.53	-------	-------
16	1.36	1.29	.73	.93	2.43	2.80	2.12	1.86	1.75	1.60	-------	-------
17	1.04	1.21	1.38	.56	2.03	4.02	2.02	2.17	1.56	1.48	-------	-------
18	.93	1.18	1.41	.96	1.92	2.95	1.99	1.90	1.37	1.19	-------	-------
19	.93	1.36	1.19	1.08	1.70	2.40	1.94	1.94	1.45	1.25	-------	-------
20	.86	1.08	1.44	1.14	1.92	1.78	1.97	1.98	1.35	1.04	-------	-------
21	1.32	.68	1.70	1.92	2.08	1.65	1.85	2.25	1.36	1.12	-------	-------
22	1.22	.78	1.32	2.08	2.10	1.68	1.86	1.83	1.31	1.53	-------	-------
23	1.25	.58	1.24	2.12	2.03	1.73	1.87	1.77	1.80	1.31	-------	-------
24	.94	.86	1.49	2.09	1.95	2.09	1.88	1.77	2.72	1.08	-------	-------
25	.66	.64	1.06	2.38	2.84	2.00	1.83	1.69	2.20	1.75	-------	-------
26	.70	1.45	1.09	2.33	2.68	3.08	1.77	1.66	1.35	1.32	-------	-------
27	.62	1.24	1.55	2.25	2.07	3.66	1.82	1.73	1.26	1.25	-------	-------
28	.70	.58	2.42	2.07	1.92	1.92	2.17	1.69	1.24	1.09	-------	-------
29	.96	.75	2.26	2.08	-------	2.03	3.22	1.61	1.28	1.17	-------	-------
30	1.00	.85	1.47	2.23	-------	2.06	2.43	1.52	1.30	3.69	-------	-------
31	.68	-------	2.22	2.27	-------	2.05	-------	1.50	-------	6.12	-------	-------

Note.—Gage height Aug. 4-31 not observed due to sickness of observer. Station discontinued August 31, 1923.

OHIO BASIN

OHIO BASIN—STATION NO. 1

ALLEGHENY RIVER NEAR LARABEE

Location.—At single-span steel highway bridge on road to Corryville, about one mile south of Pennsylvania Railroad station at Larabee, McKean County.

Drainage Area.—545 square miles.

Records Available.—June 29, 1915, to September 30, 1923.

Gage.—Standard chain attached to upstream side of bridge; read to hundredths twice daily by Miss Gladys Leet.

Discharge Measurements.—Made from upstream side of bridge or by wading; during extremely high stages from railroad bridge about 200 feet downstream from gage.

Channel and Control.—The right bank is high and not subject to overflow. At a gage height of about 4 feet the river begins to overflow the left bank above the bridge into a broad flat, where a part of the stream flow remains in storage until the river recedes. Bed is composed of gravel, stones and boulders. Low-water control is the upper sill of an old timber dam about 60 feet downstream from the gage. The timber abutements are vertical and have the effect of a wier at low stages.

Extremes of Stage.—Maximum gage height during the year, estimated from hydrograph, 13.6 feet at 1 p. m. March 5; minimum 0.40 foot at 5.25 p. m. August 26.

Ice.—Stage-discharge relation usually affected by ice.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh.

Discharge measurements of Allegheny River near Larabee, during the year ending September 30, 1923

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
20	July 16	J. M. Snavely	0.73	36.0
21	16a	do	.73	30.4

a Measurement made by wading 150 feet below gage.

Daily Mean Gage Height, in feet, of Allegheny River near Larabee, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.74	0.77	1.42	5.75	4.38	4.59	3.88	2.38	2.52	0.71	0.85	0.58
2	.73	.82	2.10	7.14	5.11	4.37	3.76	2.11	2.33	.70	.69	.56
3	.75	.94	1.58	6.03	6.33	7.75	3.58	1.93	2.10	.68	.89	.56
4	.71	.97	1.39	5.45	7.07	11.13	4.40	1.88	1.98	.80	.84	.63
5	.75	.91	1.52	4.83	5.10	13.19	8.15	1.86	1.96	.83	.70	.73
6	.71	.87	2.03	4.33	4.94	12.55	10.52	1.83	1.85	.72	.74	1.47
7	.75	.90	1.88	4.03	4.88	11.67	10.55	1.76	1.76	.72	.74	.60
8	.93	.93	2.27	3.96	4.74	10.30	9.60	1.76	2.12	.74	.91	1.04
9	.99	.97	3.17	3.69	4.84	8.40	7.52	1.87	2.02	.67	.68	1.39
10	1.72	.99	2.44	3.74	4.47	7.12	5.79	2.81	1.55	.69	.60	.82
11	2.76	.95	2.40	3.41	3.74	6.88	5.33	2.84	1.36	.76	.57	.67
12	1.35	.93	3.16	3.17	3.60	8.64	5.28	5.06	1.30	.86	.57	.63
13	1.13	.90	1.70	2.75	4.20	10.88	4.72	9.70	1.23	.79	.56	.62
14	.95	.89	2.12	2.56	6.29	10.84	4.10	9.99	1.17	.71	.60	.63
15	.90	1.32	2.30	2.84	4.85	9.48	3.91	9.01	1.15	.71	.67	.60
16	.91	1.50	2.39	3.62	4.61	9.30	3.75	8.43	1.09	.64	.64	.61
17	.91	1.19	2.32	3.12	4.57	10.73	3.45	8.03	.97	.63	.60	.58
18	.92	1.12	2.26	3.22	4.12	10.61	3.25	7.17	.93	.67	.59	.55
19	.85	1.10	2.02	3.44	3.91	10.21	3.08	6.41	.93	.64	.60	.59
20	.79	1.08	1.87	3.72	3.79	9.06	2.88	5.83	.88	.65	.55	.62
21	.73	1.05	1.82	7.13	3.69	7.94	2.65	8.23	.85	.51	.54	.71
22	.71	1.04	1.79	8.46	3.61	7.39	2.53	10.28	.83	.56	.58	.97
23	.75	1.04	1.77	7.18	3.06	8.70	2.59	9.33	.83	.59	.58	.74
24	1.47	1.06	1.67	6.13	3.13	10.38	2.36	7.77	.78	.60	.54	.70
25	1.34	1.07	1.71	5.98	3.23	10.52	2.17	6.47	.62	.61	.55	.66
26	1.22	1.08	1.79	5.43	3.53	9.54	2.10	5.53	.56	.59	.48	.63
27	1.05	1.01	2.11	4.98	4.19	8.37	2.06	4.79	.70	.63	.51	.62
28	1.00	.96	3.53	4.71	4.71	6.59	2.06	3.84	.70	.68	.56	.64
29	.95	.99	5.65	4.53	-------	5.64	2.38	3.09	.77	.88	.65	.64
30	.89	.92	3.87	4.11	-------	5.11	2.55	3.22	.73	.79	.58	.65
31	.81	------	4.22	4.83	-------	4.59	-------	2.85	-------	.88	.58	-------

Note.—Stage-discharge relation Dec. 10 to Mar. 4 affected by ice.

OHIO BASIN—STATION NO. 2

BROKENSTRAW CREEK AT YOUNGSVILLE

Location.—At single-span steel highway bridge, Youngsville, Warren County.

Drainage Area.—290 square miles.

Records Available.—October 22, 1909, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by William L. York. Elevation of gage zero 1,188.92 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of silt, clay and gravel. Control is at the first of a series of riffles, extending from 300 to 500 feet downstream from the gage; may shift occasionally.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 7.2 feet at 10 p. m. March 4, (discharge, about 6,170 second-feet); minimum,—0.40 foot at 5.05 p. m. October 7 (discharge, 30 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 50 and 5,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Daily Mean Gage Height, in feet, of Brokenstraw Creek at Youngsville, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	—0.35	—0.11	0.85	3.55	1.02	1.20	0.81	0.52	0.35	—0.10	0.64	—0.13
2	— .32	— .12	1.98	3.30	1.48	1.31	.78	.41	.30	— .13	.35	— .11
3	— .35	— .07	1.50	2.93	2.89	3.22	1.08	.39	.32	— .12	.27	— .07
4	— .34	.00	1.04	1.82	2.77	5.85	2.34	.34	.27	— .14	.15	— .07
5	— .34	.02	1.13	1.39	2.41	6.62	3.30	.29	.26	— .12	.10	.25
6	— .38	.10	1.11	1.21	1.74	4.88	3.41	.38	.28	— .08	.05	.27
7	— .39	.52	.82	.86	1.38	3.18	2.61	.24	.37	— .11	.01	.03
8	— .31	.36	1.31	.97	1.26	1.95	1.85	.36	.68	— .17	.17	— .03
9	— .26	.65	1.72	.95	1.11	1.45	1.60	.99	.50	— .19	.14	— .03
10	.05	.70	1.26	.86	.99	1.80	1.34	1.10	.37	— .16	.05	— .09
11	.30	.49	.73	.80	.97	2.75	1.16	1.11	.28	— .16	— .02	— .13
12	.09	.36	.76	.84	.83	4.20	1.10	2.51	.26	.02	— .05	— .13
13	.08	.27	.40	.70	1.30	5.40	1.11	2.78	.25	— .18	— .08	— .15
14	.03	.25	.34	1.03	2.02	4.18	.99	1.77	.20	— .21	— .11	— .17
15	— .08	.63	.69	1.47	1.58	2.71	.90	2.29	.19	— .21	— .11	— .16
16	— .09	.96	.55	1.43	1.31	3.77	1.03	6.02	.12	— .23	— .13	— .21
17	— .04	.67	.54	1.15	1.28	3.86	1.15	4.67	.07	— .26	— .15	— .19
18	— .01	.51	.50	1.26	1.04	3.15	1.00	3.23	.03	— .24	— .18	— .21
19	— .10	.42	.30	1.67	.84	2.47	.87	1.82	.05	— .28	— .17	— .11
20	— .19	.35	.36	1.95	.88	1.88	.81	1.46	.06	— .30	— .15	— .03
21	— .23	.35	.41	3.96	.84	1.63	.74	1.77	— .02	— .32	— .18	.37
22	— .20	.37	.36	3.50	.78	1.86	.70	1.54	— .06	— .33	— .13	.25
23	— .14	.32	.30	3.19	.72	3.06	.86	1.19	— .05	— .32	— .11	.07
24	.30	.46	.35	2.84	.51	3.06	.92	.88	— .05	— .30	— .15	— .02
25	.31	.47	.38	2.15	.60	2.21	.77	.74	— .11	— .28	— .13	— .08
26	.17	.42	.58	1.63	.63	1.59	.67	.76	.01	— .30	— .17	— .10
27	.13	.41	1.01	1.41	.96	1.41	.62	.70	.04	— .31	— .17	— .13
28	— .01	.47	3.27	1.29	1.12	1.25	.56	.59	— .08	— .25	— .13	— .09
29	— .04	.42	2.90	1.10	-------	1.18	.59	.54	— .02	— .26	— .03	— .05
30	— .12	.38	2.31	.88	-------	1.07	.60	.46	— .09	— .17	— .07	— .12
31	— .12	-------	2.12	.96	-------	.81	-------	.40	-------	2.12	— .11	-------

Note.—Stage-discharge relation Dec. 11-26, Jan. 5-19, Feb. 7-12 and 15-27 affected by ice.

Daily discharge, in second-feet, of Brokenstraw Creek at Youngsville, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	35	68	358	2,060	418	500	338	230	185	70	282	65
2	38	67	860	1,820	645	545	338	203	170	65	185	68
3	35	76	645	1,510	1,510	1,740	458	197	176	67	161	76
4	36	90	438	800	1,440	4,320	1,100	182	161	63	128	76
5	36	95	479	500	1,160	5,340	1,820	167	158	67	115	155
6	32	115	458	360	745	3,300	1,900	194	164	74	102	161
7	31	230	338	300	500	1,740	1,300	152	191	68	92	93
8	39	188	545	280	380	920	800	188	300	58	132	84
9	45	282	745	260	300	620	695	418	230	55	125	84
10	102	300	522	240	260	800	570	458	191	60	102	72
11	170	227	240	220	260	1,440	479	458	164	60	86	65
12	112	188	180	200	260	2,600	458	1,230	158	95	80	65
13	110	161	140	200	545	3,850	458	1,440	155	56	74	62
14	98	155	120	220	920	2,600	418	800	140	52	68	58
15	74	282	90	380	600	1,370	378	1,100	138	52	68	60
16	72	378	80	440	380	2,240	438	4,560	120	49	65	52
17	82	282	80	420	300	2,330	479	3,100	108	45	62	55
18	88	230	80	480	240	1,740	418	1,740	98	48	56	52
19	70	206	80	650	240	1,230	358	800	102	43	58	68
20	55	185	70	920	200	860	338	620	105	40	62	84
21	49	185	80	2,420	180	695	319	800	86	38	56	191
22	53	191	90	1,980	170	860	300	645	78	37	65	155
23	63	176	90	1,740	170	1,660	358	500	80	38	68	108
24	170	218	100	1,440	160	1,660	378	378	80	40	62	86
25	173	221	130	1,040	160	1,040	319	319	68	43	65	74
26	132	206	170	695	170	695	282	319	92	40	58	70
27	122	203	438	595	240	595	265	300	100	39	58	65
28	88	221	1,820	545	458	522	248	265	74	46	65	72
29	82	206	1,510	458	-------	500	265	248	86	45	84	80
30	67	194	1,100	378	-------	438	265	218	72	58	76	67
31	67	-------	980	398	-------	338	-------	200	-------	980	68	-------

Note.—Discharge Dec. 11-26, Jan. 5-19 Feb. 7-12 and 15-27 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Oil Creek near Rouseville and French Creek at Kimmeytown and Saegertown.

Monthly discharge of Brokenstraw Creek at Youngsville, for the year ending September 30, 1923.

(Drainage area, 290 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	173	31	78.3	0.270	0.31
November	378	67	194	.669	.75
December	1,820	70	421	1.45	1.67
January	2,420	200	773	2.67	3.08
February	1,510	160	465	1.60	1.67
March	5,340	338	1,580	5.45	6.28
April	1,900	248	551	1.90	2.12
May	4,560	152	724	2.50	2.88
June	300	68	134	.462	.52
July	980	37	83.6	.288	.33
August	282	56	91.2	.314	.36
September	191	52	84.3	.291	.32
The Year	5,340	31	434	1.50	20.29

OHIO BASIN—STATION NO. 3

TIONESTA CREEK AT BUTLER BRIDGE

Location.—At three-span steel highway bridge, known as Butler Bridge, about two miles upstream from Nebraska, Forest County.

Drainage Area.—420 square miles.

Records Available.—July 26, 1912, to August 4, 1923, when the station was discontinued.

Gage.—Standard chain attached to downstream side of bridge; read by Mrs. P. S. Moore.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank is high and not subject to overflow; left becomes inundated at a stage of about 12.6 feet. Bed is composed of gravel and boulders. Control is at a riffle composed of gravel, at the head of an island about 500 feet downstream from the gage; probably permanent.

Extremes of Discharge.—Maximum open-water stage during the period, 7.85 feet observed at 10 a. m. March 13 (discharge, 4,580 second-feet); a stage of 11.68 feet was observed at 11 a. m. January 21, but the water was held back by an ice jam; minimum, 2.94 feet at 5 p. m. October 4 (discharge, 25 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 1,000 second-feet and fairly well defined between 1,000 and 5,000 second-feet. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Results good.

The following discharge measurement was made by C. B. McElrath: No. 24, June 3: Gage height, 3.88 feet; discharge, 288 second-feet.

Daily Mean Gage Height, in feet, of Tionesta Creek at Butler Bridge, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.20	3.26	3.55	11.64	4.51	9.36	4.25	4.05	4.00	3.20	3.36	-------
2	3.00	3.26	3.72	11.12	4.58	9.14	4.25	4.00	3.80	3.15	3.32	-------
3	2.96	3.26	4.17	7.25	4.62	10.02	4.36	3.95	3.80	3.10	3.40	-------
4	2.94	3.18	4.31	5.32	5.35	8.44	4.85	3.90	3.90	3.20	3.34	-------
5	3.0-	3.16	4.75	4.88	5.02	8.63	5.63	3.70	3.90	3.26	-------	-------
6	3.16	3.40	4.64	4.70	5.28	7.61	5.70	3.70	3.85	3.40	-------	-------
7	3.20	3.70	4.23	4.57	8.48	6.98	5.37	3.68	3.80	3.20	-------	-------
8	3.10	3.65	4.36	4.55	10.81	6.80	5.27	3.92	4.20	3.20	-------	-------
9	3.10	3.60	4.84	4.48	10.74	5.84	5.18	4.09	3.90	3.28	-------	-------
10	3.40	3.55	4.65	4.43	10.25	5.40	4.86	4.24	3.85	3.30	-------	-------
11	3.40	3.55	4.30	4.33	9.81	5.54	4.77	5.45	3.65	3.32	-------	-------
12	3.50	3.50	4.20	4.43	9.32	6.60	4.52	6.85	3.65	3.32	-------	-------
13	3.40	3.40	4.29	5.99	10.18	7.67	4.45	7.27	3.45	3.40	-------	-------
14	3.40	3.36	5.10	-------	10.61	6.76	4.38	6.25	3.40	3.40	-------	-------
15	3.30	3.83	5.53	9.90	9.86	6.11	4.20	5.70	3.45	3.20	-------	-------
16	3.30	4.25	5.42	9.90	9.70	6.28	4.30	5.80	3.60	3.20	-------	-------
17	3.32	4.00	5.28	9.10	9.65	6.25	4.30	5.70	3.50	3.16	-------	-------
18	3.30	3.77	5.10	9.10	9.20	6.15	4.20	5.40	3.48	3.12	-------	-------
19	3.30	3.60	4.70	9.32	9.20	6.05	4.15	5.12	3.30	3.12	-------	-------
20	3.30	3.60	4.65	9.76	9.20	5.78	4.10	4.90	3.40	3.12	-------	-------
21	3.20	3.65	4.65	10.84	9.00	5.42	4.05	6.70	3.40	3.10	-------	-------
22	3.16	3.60	4.70	6.94	8.91	5.43	4.10	5.75	3.30	3.10	-------	-------
23	3.30	3.60	4.65	5.87	8.27	5.94	4.10	5.20	3.20	3.10	-------	-------
24	3.50	3.65	4.65	5.40	8.20	6.01	4.10	4.95	3.38	3.10	-------	-------
25	3.60	3.50	4.65	5.23	8.26	5.62	4.00	4.70	3.20	3.10	-------	-------
26	3.45	3.60	4.70	4.98	8.75	5.40	4.00	4.60	3.30	3.10	-------	-------
27	3.40	3.70	4.80	4.74	9.13	5.25	3.95	4.55	3.40	3.18	-------	-------
28	3.50	3.65	6.73	4.69	9.46	5.08	4.00	4.50	3.40	3.30	-------	-------
29	3.26	3.60	11.10	4.50	-------	4.81	4.05	4.30	3.38	3.40	-------	-------
30	3.30	3.50	10.42	4.45	-------	4.62	4.05	4.20	3.32	3.38	-------	-------
31	3.26	-------	11.01	4.42	-------	4.40	-------	4.10	-------	3.36	-------	-------

NOTE.—Stage-discharge relation Dec. 12 to Jan. 4, Jan. 12-21 and Feb. 6 to Mar. 3 affected by ice. Gage height Jan. 14 not observed. Station discontinued Aug. 4, 1923.

Daily discharge, in second-feet, of Tionesta Creek at Butler Bridge, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	60	72	145	3,000	590	1,000	433	330	305	60	94	-------
2	30	72	197	2,600	660	900	433	305	225	51	85	-------
3	27	72	380	1,600	660	2,600	490	285	225	42	103	-------
4	25	56	460	1,200	1,340	5,450	860	265	265	60	90	-------
5	32	53	780	900	990	5,750	1,610	190	265	72	-------	-------
6	53	103	700	740	950	4,300	1,730	190	245	103	-------	-------
7	60	190	433	625	800	3,460	1,340	184	225	60	-------	-------
8	42	175	490	625	750	3,180	1,230	273	405	60	-------	-------
9	42	160	860	590	650	1,850	1,180	355	265	76	-------	-------
10	103	145	700	555	550	1,340	860	433	245	80	-------	-------
11	103	145	460	490	500	1,500	780	1,440	175	85	-------	-------
12	130	130	380	400	440	2,900	590	3,180	175	85	-------	-------
13	103	103	300	360	600	4,440	555	3,880	117	103	-------	-------
14	103	101	260	400	1,100	3,180	520	2,360	103	103	-------	-------
15	80	237	240	1,400	800	2,230	405	1,730	117	60	-------	-------
16	80	433	220	1,400	600	2,490	460	1,850	160	60	-------	-------
17	85	305	190	1,000	500	2,360	460	1,730	130	53	-------	-------
18	80	214	180	950	460	2,230	405	1,390	125	46	-------	-------
19	80	160	160	1,100	400	2,100	380	1,080	80	46	-------	-------
20	80	160	160	3,000	400	1,850	355	900	103	46	-------	-------
21	60	175	160	4,800	380	1,390	330	3,040	103	42	-------	-------
22	53	160	160	3,320	360	1,440	355	1,850	80	42	-------	-------
23	80	160	160	1,970	340	1,970	355	1,180	60	42	-------	-------
24	130	175	160	1,390	300	2,100	355	945	98	42	-------	-------
25	160	130	180	1,230	300	1,610	305	740	60	42	-------	-------
26	117	160	190	990	380	1,390	305	660	80	42	-------	-------
27	103	190	300	780	750	1,230	285	625	103	56	-------	-------
28	80	175	1,600	740	1,100	1,080	305	590	103	80	-------	-------
29	72	160	2,600	590	-------	820	330	460	98	103	-------	-------
30	80	130	1,700	555	-------	660	330	405	85	98	-------	-------
31	72	-------	1,300	520	-------	520	-------	355	-------	94	-------	-------

NOTE.—Discharge Dec. 12 to Jan. 4, Jan. 12-21 and Feb. 6 to Mar. 3 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Brokenstraw Creek at Youngsville, Oil Creek near Rouseville, Clarion River near Clarion and Red Bank Creek at Saint Charles. Station discontinued Aug. 4, 1923.

Monthly discharge of Tionesta Creek at Butler Bridge, for the year ending September 30, 1923.
(Drainage area, 420 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	160	25	77.6	0.185	0.21
November	433	53	157	.374	.42
December	2,600	145	523	1.25	1.44
January	4,800	360	1,280	3.05	3.52
February	1,340	300	630	1.50	1.56
March	5,750	520	2,240	5.33	6.14
April	1,730	285	611	1.45	1.62
May	3,880	184	1,070	2.55	2.94
June	405	60	161	.383	.43
July	103	42	65.6	.156	.18
August 1-4	103	85	93.0	.221	.03
September					

NOTE.—Station discontinued Aug. 4, 1923.

OHIO BASIN—STATION NO. 4

TIONESTA CREEK AT NEBRASKA

Location.—At single-span steel highway bridge, Nebraska, Forest County, on road to Newmansville, about one third of a mile downstream from the mouth of Coon Creek.

Drainage Area.—473 square miles.

Records Available.—October 24, 1909, to September 30, 1912, and August 5 to September 30, 1923. Records prior to August 5, 1923, are contained in the Report of the Flood Commission, Pittsburgh, Pennsylvania.

Gage.—Standard chain attached to downstream side of bridge; read to hundredths twice daily by Richard McKee. Elevation of gage zero 1,077.78 feet.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—The left bank is high and not subject to overflow; right is of medium height and overflows during extremely high stages. Bed is composed of gravel and rock; probably permanent. Control is the sill of an old dam a few hundred feet below the gage.

Extremes of Stage.—Maximum gage height during the period August 5 to September 30, 5.41 feet observed at 6 p. m. September 6; minimum, 3.57 feet at 7.40 p. m. August 22.

Ice.—Stage-discharge relation usually affected by ice.

The following discharge measurement was made by C. B. McElrath: No. 18. August 5: Gage height, 4.28 feet; discharge, 69.0 second-feet.

Daily Mean Gage Height, in feet, of Tionesta Creek at Nebraska, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1												4.15
2												4.02
3												3.96
4												4.34
5											4.22	4.84
6											4.29	5.36
7											4.12	4.55
8											4.19	4.37
9											3.98	4.30
10											3.93	4.22
11											3.88	4.18
12											4.02	4.12
13											4.24	4.16
14											4.18	4.08
15											4.03	4.10
16											3.80	4.08
17											3.82	4.02
18											3.76	4.00
19											3.68	4.10
20											3.74	4.32
21											3.66	4.89
22											3.68	4.76
23											3.86	4.51
24											3.98	4.35
25											3.91	4.22
26											3.92	4.20
27											3.86	4.08
28											4.16	4.11
29											4.30	4.20
30											4.32	4.08
31											4.20	

NOTE.—Station reestablished August 5, 1923.

OHIO BASIN—STATION NO. 5

OIL CREEK NEAR ROUSEVILLE

Location.—At two-span steel highway bridge, one half mile downstream from Rouseville, Venango County.

Drainage Area.—330 square miles.

Records Available.—October 20, 1909, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by Mrs. Lenna Copeland.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Left bank is high and not subject to overflow; right becomes inundated at a stage of about 9.2 feet. Bed is composed of gravel and boulders. Control is the first of a series of riffle extending from 250 to 450 feet downstream from the gage; practically permanent.

Extremes of Discharge.—Maximum stage during the year, 4.60 feet observed at 10 a. m. March 5 (discharge, 5,560 second-feet), minimum, 0.57 foot at 9.15 a. m. September 3, and from 9.30 a. m. September 15 to 9.30 a. m. September 16 (discharge, 36 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 50 and 10,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. **Results good.**

Discharge measurements of Oil Creek near Rouseville, during the year ending September 30, 1923.

No.	Date	Made by	Gage Height	Discharge
			Feet	Sec. ft.
44	Oct. 9 a	C. B. McElrath	0.66	54.6
45	Aug. 4	do	0.70	60.4

a Meaurement made by wading 200 feet above gage.

Daily Man Gage Height, in feet, of Oil Creek near Rouseville, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.62	0.72	1.57	3.21	1.49	2.00	1.19	1.19	1.16	0.81	0.92	0.63
2	.62	.72	2.31	2.93	1.71	1.89	1.21	1.13	1.11	.77	.76	.61
3	.62	.74	1.66	2.17	2.63	3.08	1.43	1.10	1.06	.75	.71	.71
4	.62	.76	1.38	1.95	2.43	4.32	2.14	1.08	1.23	.77	.70	.73
5	.62	.75	1.40	1.77	1.93	4.38	2.86	1.06	1.05	.79	.69	.68
6	.62	.90	1.47	1.57	1.68	3.40	2.60	1.04	1.10	.81	.69	1.04
7	.65	1.11	1.28	1.27	1.60	2.40	2.15	1.02	1.10	.79	.67	.77
8	.68	1.04	1.70	1.56	1.60	2.05	1.90	1.04	1.29	.76	.67	.75
9	.68	.98	1.90	1.50	1.48	1.68	1.75	1.51	1.17	.73	.65	.69
10	.89	.98	1.54	1.40	1.42	1.98	1.68	1.52	1.05	.71	.65	.67
11	1.07	.96	1.19	1.34	1.40	2.60	1.61	1.61	1.01	.79	.65	.64
12	.86	.92	1.26	1.30	1.38	3.25	1.50	3.03	.96	.75	.70	.65
13	.79	.86	1.18	1.24	1.67	3.79	1.50	3.06	.92	.73	.79	.62
14	.74	.86	1.18	1.34	2.24	2.73	1.46	2.21	.91	.71	.68	.61
15	.74	1.15	1.27	2.13	1.80	2.17	1.40	2.10	.87	.73	.65	.57
16	.72	1.33	1.11	2.22	1.62	2.95	1.55	3.73	.87	.71	.65	.58
17	.76	1.14	1.10	1.81	1.50	2.68	1.52	3.44	.87	.69	.63	.61
18	.74	1.05	1.00	1.89	1.43	2.25	1.44	2.52	.85	.67	.63	.59
19	.74	1.03	1.01	2.07	1.40	2.15	1.40	2.10	.83	.65	.63	.67
20	.72	.98	.92	2.22	1.43	1.85	1.35	1.91	.83	.64	.65	.94
21	.70	.94	1.01	4.04	1.36	1.83	1.28	2.27	.83	.63	.60	1.12
22	.68	.95	1.04	3.35	1.30	1.96	1.28	2.00	.83	.63	.69	.90
23	.75	.98	1.05	2.63	-------	2.50	1.30	1.78	.81	.61	.69	.78
24	1.03	1.00	1.04	2.33	1.43	2.33	1.42	1.66	.82	.63	.66	.75
25	.98	1.18	1.06	2.26	1.71	1.95	1.29	1.54	.80	.63	.63	.69
26	.86	1.05	1.08	1.88	-------	1.86	1.22	1.49	.79	.61	.63	.68
27	.83	1.08	1.42	1.75	1.80	1.75	1.22	1.40	.81	.61	.63	.65
28	.77	1.08	3.26	1.68	2.00	1.64	1.22	1.32	.81	.69	.65	.65
29	.74	1.00	3.15	1.58	-------	1.43	1.21	1.27	.83	.69	.72	.65
30	.74	.99	2.24	1.40	-------	1.48	1.20	1.20	.82	.67	.69	.65
31	.72	-------	2.13	1.32	-------	1.35	-------	1.15	-------	.72	.64	-------

Note.—Stage-discharge relation Dec. 13-25 and Feb. 26-28 affected by ice. Gage height Feb. 23 and 26 not observed.

Daily discharge, in second-feet, of Oil Creek near Rouseville, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	43	57	370	2,580	329	750	182	182	171	72	96	44
2	43	57	1,110	2,120	480	650	189	160	154	65	64	41
3	43	60	442	920	1,630	2,390	293	150	137	62	56	56
4	43	64	265	700	1,320	4,870	920	144	197	65	54	59
5	43	62	275	520	700	5,100	1,960	137	134	68	53	51
6	43	90	317	370	480	2,210	1,550	131	150	72	53	131
7	47	154	217	213	405	1,250	920	124	150	68	50	65
8	51	131	480	335	405	805	650	131	221	64	50	62
9	51	112	650	335	323	480	520	335	174	59	47	53
10	88	112	370	275	287	750	480	335	134	56	47	50
11	140	107	182	245	275	1,550	405	405	121	68	47	46
12	82	96	150	225	265	2,580	335	2,210	107	62	54	47
13	68	82	130	201	442	3,780	335	2,390	96	59	68	43
14	60	82	120	245	1,040	1,790	311	980	93	56	51	41
15	60	168	100	920	560	920	275	860	84	59	47	36
16	57	240	100	980	405	2,120	370	3,570	84	56	47	38
17	64	164	100	560	335	1,710	335	2,970	84	53	44	41
18	60	134	90	650	293	1,040	299	1,400	80	50	44	39
19	60	128	90	805	275	920	275	860	76	47	44	50
20	57	112	90	980	260	605	250	650	76	46	47	101
21	54	101	90	4,200	220	605	217	1,040	76	44	40	157
22	51	104	100	2,970	220	700	217	750	76	44	53	90
23	62	112	120	1,630	180	1,400	225	560	72	41	53	67
24	128	118	120	1,180	180	1,180	287	442	74	44	48	62
25	112	178	130	1,040	180	700	221	370	70	44	44	53
26	82	134	144	650	200	605	193	329	68	41	44	51
27	76	144	287	520	280	520	193	275	72	41	44	47
28	65	144	2,770	480	650	442	193	235	72	53	47	47
29	60	118	2,580	405	-------	293	189	213	76	53	57	47
30	60	115	1,040	275	-------	323	185	185	74	50	53	47
31	57	-------	920	235	-------	250	-------	168	-------	57	46	-------

Note.—Discharge Dec. 12-25 and Feb. 20-28 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Brokenstraw Creek at Youngsville, French Creek at Carlton and Allegheny River at Franklin.

Monthly discharge of Oil Creek near Rouseville, for the year ending September 30, 1923.

(Drainage area, 330 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	140	43	64.8	0.196	0.23
November	240	57	116	.352	.39
December	2,770	90	450	1.36	1.57
January	4,200	201	896	2.72	3.14
February	1,630	180	451	1.37	1.43
March	5,100	250	1,400	4.24	4.89
April	1,960	182	432	1.31	1.46
May	3,570	124	732	2.22	2.56
June	221	68	108	.327	.36
July	72	41	55.5	.168	.19
August	96	40	51.4	.156	.18
September	157	36	58.7	.178	.20
The Year	5,100	36	403	1.22	16.62

OHIO BASIN—STATION NO. 6

FRENCH CREEK AT KIMMEYTOWN

Location.—At single-span steel highway bridge, Kimmeytown, Erie County, about 4 miles upstream from the mouth of South Branch French Creek and about 5 miles north of Union City.

Drainage Area.—207 square miles.

Records Available.—May 16, 1910, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by Mrs. J. L. Carter. Elevation of gage zero 1,235.7 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank begins to overflow at a stage of 8.2 feet; left is high and not subject to overflow. Bed is composed of gravel and boulders. Control for low water is at the first of a series of riffles extending from 10 to 60 feet downstream from the gage; probably shifts occasionally.

Extremes of Drainage.—Maximum stage during the year, estimated from hydrograph, 8.5 feet at 9 a. m. March 4 (discharge, about 5,430 second-feet); minimum, 0.50 foot at 5.15 p. m. October 2 (discharge, 12 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined to 5,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Daily Mean Gage Height, in feet, of French Creek at Kimmeytown, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.58	0.65	1.86	3.89	1.72	3.61	1.45	1.24	0.90	0.72	0.62	0.60
2	.56	.63	2.64	3.77	2.56	3.30	1.42	1.21	.85	.71	.61	.61
3	.55	.74	2.08	3.35	3.82	4.35	1.91	1.14	.85	.67	.66	.58
4	.56	.78	1.65	2.41	3.76	7.37	3.62	1.04	.87	.69	.64	.59
5	.57	.94	1.65	2.09	3.47	7.23	4.63	1.02	.87	.66	.63	.57
6	.62	.95	1.58	1.74	2.81	4.71	4.38	.95	.90	.68	.59	.59
7	.61	1.05	1.32	1.80	2.37	3.35	3.42	.94	.93	.73	.60	.61
8	.61	1.16	1.67	1.63	1.92	2.74	2.61	.93	1.09	.73	.62	.64
9	.62	1.54	2.28	1.54	1.73	2.42	2.23	1.62	.99	.71	.59	.61
10	.73	1.67	1.79	1.47	1.60	2.45	1.97	2.11	.97	.71	.58	.66
11	.80	1.34	1.31	1.51	1.63	3.73	1.78	2.31	.92	.69	.60	.63
12	.89	1.18	1.29	1.53	1.64	5.27	1.89	2.66	.86	.72	.62	.63
13	.86	1.08	1.13	1.72	2.01	6.41	1.96	2.97	.82	.66	.59	.64
14	.74	.96	1.70	2.96	2.67	3.97	1.75	2.17	.88	.66	.58	.60
15	.74	1.17	2.01	2.93	2.23	3.12	1.58	2.39	.87	.66	.58	.58
16	.77	1.52	2.09	5.27	2.12	4.31	2.00	3.86	.83	.64	.58	.59
17	.78	1.36	2.61	6.16	1.94	4.38	2.09	3.58	.80	.65	.58	.58
18	.77	1.20	2.03	5.67	1.75	3.32	1.79	2.59	.81	.64	.56	.59
19	.68	1.08	1.97	5.70	2.52	2.78	1.63	2.05	.78	.63	.59	.65
20	.70	1.04	1.85	5.64	2.87	2.24	1.49	1.68	.73	.62	.54	.62
21	.66	1.08	1.72	6.01	3.01	2.22	1.40	1.58	.74	.61	.54	.70
22	.68	1.22	1.71	4.63	3.19	3.35	1.34	1.55	.75	.58	.58	.74
23	.68	1.17	1.54	4.35	3.55	3.78	1.73	1.45	.78	.58	.58	.74
24	.86	1.39	1.48	3.84	3.50	3.69	2.14	1.31	.75	.62	.57	.66
25	.84	1.34	1.49	3.09	3.39	2.71	1.74	1.22	.72	.62	.58	.63
26	.80	1.33	1.76	2.78	3.34	2.22	1.46	1.14	.72	.59	.58	.63
27	.78	1.25	2.11	2.18	3.47	1.97	1.32	1.11	.70	.60	.58	.60
28	.78	1.22	3.32	2.01	3.60	1.72	1.32	1.05	.68	.66	.70	.68
29	.73	1.21	3.11	1.92	-------	1.62	1.27	.98	.72	.67	.64	.64
30	.70	1.15	2.83	1.83	-------	1.63	1.42	.94	.81	.66	.60	.60
31	.65	-------	2.51	2.02	-------	1.49	-------	.94	-------	.66	.60	-------

Note.—Stage-discharge relation Dec. 14-27, Jan. 7-21 and Feb. 16 to Mar. 1 affected by ice

Daily discharge, in second-feet, of French Creek at Kimmeytown, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	22	290	1,190	245	550	172	120	55	29	20	18
2	16	26	540	1,130	540	840	165	112	48	27	19	19
3	15	32	365	895	1,130	1,510	305	98	48	24	23	17
4	16	37	230	470	1,130	4,140	1,010	78	50	25	21	17
5	16	61	230	365	950	3,920	1,650	74	50	23	20	16
6	20	62	215	260	620	1,720	1,510	62	55	24	17	17
7	19	80	140	220	452	895	895	61	60	30	18	19
8	19	102	230	180	305	580	540	60	88	30	20	21
9	20	200	435	160	260	470	418	215	68	27	17	19
10	30	230	275	150	215	488	320	365	66	27	17	23
11	40	145	138	140	230	1,070	275	435	58	25	18	20
12	54	106	132	140	230	2,160	305	580	49	29	20	20
13	49	86	96	150	335	3,140	320	700	43	23	17	21
14	32	64	80	340	580	1,250	260	382	52	23	17	18
15	32	104	70	550	418	745	215	470	50	23	17	17
16	36	185	60	600	300	1,440	335	1,190	44	21	17	17
17	37	150	60	440	240	1,510	365	1,010	40	22	17	17
18	36	110	60	440	200	840	275	540	42	21	16	17
19	24	86	60	600	170	620	230	350	37	20	17	22
20	26	78	60	1,100	160	418	182	245	30	20	14	20
21	23	86	60	1,800	140	400	160	215	32	19	14	26
22	24	115	70	1,650	120	895	145	200	33	17	17	32
23	24	104	70	1,510	110	1,130	260	172	37	17	17	32
24	49	158	80	1,130	110	1,070	382	138	33	20	16	23
25	46	145	100	745	110	580	260	115	29	20	17	20
26	40	142	130	620	120	400	175	98	29	17	17	20
27	37	122	300	400	170	320	140	92	26	18	17	18
28	37	115	840	335	340	245	140	80	24	23	26	24
29	30	112	745	305	-------	215	128	67	29	24	21	21
30	26	100	620	290	-------	230	165	61	42	23	18	18
31	22	-------	505	335	-------	182	-------	61	-------	23	18	-------

Note.—Discharge Dec. 14-27, Jan. 7-21 and Feb. 16 to Mar. 1 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for French Creek at Saegertown, Brokenstraw Creek at Youngsville and Oil Creek near Rouseville.

Monthly discharge of French Creek at Kimmeytown, for the year ending September 30, 1923.
(Drainage area, 207 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	54	15	29.4	0.142	0.16
November	230	20	105	.507	.57
December	840	60	235	1.14	1.31
January	1,800	140	601	2.90	3.34
February	1,130	110	355	1.71	1.78
March	4,140	182	1,100	5.31	6.12
April	1,650	128	390	1.88	2.10
May	1,190	60	272	1.31	1.51
June	88	24	44.9	.217	.24
July	30	17	23.0	.111	.13
August	26	14	18.1	.087	.10
September	32	16	20.3	.098	.11
The Year	4,140	14	267	1.29	17.47

OHIO BASIN—STATION NO. 7

FRENCH CREEK AT SAEGERTOWN

Location.—At single-span steel highway bridge, at lower end of Saegertown, Crawford County, about one half mile upstream from the mouth of Woodcock Creek.

Drainage Area.—586 square miles.

Records Available.—April 23, 1921, to September 30, 1923. Discharge measurements have been made at the station since August 5, 1915.

Gage.—Standard chain attached to upstream side of bridge; read by Frank L. Peters.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Right bank becomes inundated at a stage of 13 feet; left is high and not subject to overflow. Bed is composed of gravel and boulders. Control is at a riffle, about 700 feet downstream from gage, at the head of an island; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 11.38 feet observed at 6 p. m. March 5 (discharge, about 10,900 second-feet); minimum, 2.08 feet at 6.30 a. m. August 21 (discharge, 32 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 2,000 second-feet and fairly well defined between 2,000 and 9,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

The following discharge measurement was made by C. B. McElrath: No. 22, October 7; Gage height, 2.15 feet; discharge, 44.4 second-feet. Measurement made by wading 250 feet above gage.

Daily Mean Gage Height, in feet, of French Creek at Saegertown, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.16	2.32	3.63	6.24	3.76	6.78	3.33	3.06	2.75	2.42	2.52	2.24
2	2.16	2.31	5.24	6.89	4.38	6.48	[illegible]40	2.98	2.74	2.39	2.43	2.21
3	2.15	2.33	4.40	6.00	6.01	7.45	[illegible]72	2.92	2.63	2.39	2.37	2.18
4	2.14	2.35	3.78	5.15	6.55	9.30	[illegible]13	2.86	2.60	2.38	2.38	2.16
5	2.14	2.38	3.58	4.42	5.89	11.05	[illegible]67	2.81	2.58	2.37	2.29	2.21
6	2.16	2.51	3.64	3.92	5.20	10.20	.19	2.76	2.60	2.37	2.27	2.45
7	2.20	2.66	3.32	3.60	4.63	7.12	6.23	2.74	2.67	2.37	2.24	2.39
8	2.20	2.78	3.75	3.50	4.18	5.36	5.10	2.77	2.86	2.32	2.23	2.37
9	2.18	2.87	4.60	3.51	3.95	4.76	4.46	3.35	3.04	2.30	2.23	2.29
10	2.26	3.15	4.02	3.21	3.72	5.12	4.14	3.88	2.82	2.33	2.21	2.25
11	2.26	3.05	3.50	3.28	3.56	6.62	3.88	4.16	2.64	2.34	2.23	2.26
12	2.32	2.86	3.28	3.39	3.42	7.78	3.78	5.28	2.70	2.33	2.21	2.23
13	2.44	2.71	3.05	5.39	4.32	8.79	3.80	5.92	2.60	2.32	2.17	2.21
14	2.42	2.64	2.63	3.38	5.36	8.46	3.72	4.76	2.53	2.33	2.15	2.20
15	2.38	2.76	2.99	4.24	4.72	6.06	3.65	4.56	2.55	2.32	2.19	2.19
16	2.38	2.96	3.21	4.70	4.15	6.18	3.88	5.94	2.50	2.31	2.16	2.19
17	2.36	3.10	3.06	4.52	3.95	7.12	4.11	6.86	2.47	2.29	2.17	2.19
18	2.40	3.01	2.99	4.57	4.50	6.18	3.82	5.55	2.44	2.30	2.15	2.19
19	2.32	2.86	3.05	5.02	6.66	5.20	3.62	4.56	2.45	2.28	2.15	2.21
20	2.35	2.70	3.32	5.29	6.75	4.74	3.50	3.96	2.47	2.26	2.14	2.25
21	2.30	2.68	3.11	6.83	6.53	4.40	3.32	3.83	2.43	2.26	2.10	2.35
22	2.24	2.72	3.00	7.89	6.30	4.52	3.24	3.78	2.40	2.24	2.18	2.47
23	2.28	2.81	3.07	7.70	5.95	5.45	3.30	3.49	2.40	2.23	2.16	2.42
24	2.37	2.94	2.99	6.60	5.72	6.02	3.73	3.30	2.36	2.23	2.12	2.37
25	2.48	3.15	3.02	7.55	5.99	5.20	3.59	3.20	2.34	2.20	2.13	2.35
26	2.50	3.15	3.23	4.84	6.06	4.49	3.34	3.03	2.38	2.19	2.11	2.29
27	2.44	3.11	3.85	4.44	6.62	4.12	3.20	2.97	2.35	2.18	2.11	2.27
28	2.46	3.06	6.05	4.22	6.87	3.85	3.15	2.91	2.40	2.20	2.19	2.24
29	2.36	3.03	6.50	4.02	-------	3.52	3.09	2.85	2.40	2.22	2.18	2.21
30	2.35	2.98	6.00	3.82	-------	3.67	3.07	2.79	2.46	2.22	2.25	2.19
31	2.35	-------	5.12	3.85	-------	3.54	-------	2.70	-------	2.45	2.23	-------

NOTE.—Stage-discharge relation Dec. 11 to Jan. 1, Jan. 8-13, 24 and 25, and Feb. 7 to Mar. 1 affected by ice.

Daily discharge, in second-feet, of French Creek at Saegertown, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	44	78	770	2,600	900	1,700	608	420	252	107	144	59
2	44	75	1,880	3,400	1,310	3,000	640	378	246	97	111	52
3	42	80	1,310	2,550	2,550	3,940	835	343	192	97	92	47
4	40	86	900	1,880	3,100	6,580	1,800	309	178	94	94	44
5	40	94	770	1,310	2,460	9,900	3,200	282	170	92	70	52
6	44	140	770	965	1,880	8,200	3,720	257	178	92	65	118
7	50	207	575	770	1,400	3,610	2,730	246	212	92	59	97
8	50	267	900	600	1,000	2,040	1,800	262	309	78	57	92
9	47	315	1,450	500	850	1,590	1,380	608	420	72	57	70
10	63	480	1,030	480	650	1,800	1,100	965	288	80	52	61
11	63	420	600	460	600	3,100	965	1,170	197	83	57	63
12	78	309	400	480	600	4,420	900	1,960	226	80	52	57
13	114	231	280	500	1,000	5,790	900	2,460	178	78	45	52
14	107	197	200	640	1,700	5,350	835	1,590	149	80	42	50
15	94	257	180	1,170	1,400	2,550	770	1,450	157	78	48	48
16	94	366	180	1,520	900	2,730	965	2,460	136	75	44	48
17	89	450	160	1,380	750	3,610	1,100	3,400	125	70	45	48
18	100	390	160	1,450	650	2,730	900	2,200	114	72	42	48
19	78	309	160	1,730	600	1,960	770	1,450	118	68	42	52
20	86	226	180	1,960	500	1,520	705	1,030	125	63	40	61
21	72	216	180	3,300	420	1,310	575	900	111	63	34	86
22	59	236	200	4,550	400	1,380	542	900	100	59	47	125
23	68	282	200	4,290	360	2,040	575	705	100	57	44	107
24	92	355	260	3,000	340	2,550	835	575	89	57	37	92
25	129	480	300	2,200	340	1,880	770	510	83	50	39	86
26	136	480	400	1,590	340	1,380	608	420	94	48	36	70
27	114	450	650	1,310	500	1,100	510	372	86	47	36	65
28	122	420	1,400	1,170	950	900	480	337	100	50	48	59
29	89	420	2,400	1,030	-------	705	450	304	100	54	47	52
30	86	378	2,000	900	-------	835	420	272	122	54	61	48
31	86	-------	1,600	900	-------	705	-------	226	-------	118	57	-------

NOTE.—Discharge Dec. 11 to Jan. 1, Jan. 8-13, 24 and 25, and Feb. 7 to Mar. 1 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for French Creek at Kimmeytown and Carlton and Oil Creek near Rouseville.

Monthly discharge of French Creek at Saegertown, for the year ending September 30, 1923.

(Drainage area, 586 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	136	40	78.1	0.133	0.15
November	480	75	290	.495	.55
December	2,400	160	724	1.24	1.43
January	4,550	460	1,630	2.78	3.20
February	3,100	340	1,020	1.74	1.81
March	9,900	705	2,930	5.00	5.76
April	3,720	420	1,080	1.84	2.05
May	3,400	226	928	1.58	1.82
June	420	83	165	.282	.31
July	118	47	74.4	.127	.15
August	144	34	56.3	.096	.11
September	125	44	67.0	.114	.13
The Year	9,900	34	755	1.29	17.47

OHIO BASIN—STATION NO. 8

CUSSEWAGO CREEK NEAR MEADVILLE

Location.—At single-span steel highway bridge near Jones' Farm, about four and one-half miles northwest of Meadville, Crawford County.

Drainage Area.—88 square miles.

Records Available.—May 3, 1910, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by Thomas McCay. Elevation of gage zero 1,071.77 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are subject to overflow; the right becomes inundated at a stage of about 8.6 feet and the left at about 9.1 feet. Bed is composed of sand, gravel and boulders. Low-water control is a gravel bar 5 feet downstream from the gage; practically permanent. Control for medium and high stages is an old dam about 4 miles downstream.

Extremes of Discharge.—Maximum stage during the year, 10.63 feet observed at 6 p. m. March 4 (discharge, 1,060 second-feet); minimum, 0.32 foot at 7 a. m. August 21 (discharge, 0.7 second-foot).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined below 900 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

The following discharge measurement was made by R. J. Ferris: No. 39, September 26: Gage height, 0.66 foot; discharge, 2.96 second-feet.

Daily Mean Gage Height, in feet, of Cussewago Creek near Meadville, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.48	0.73	2.82	6.94	3.73	6.74	2.60	1.85	1.22	0.75	0.65	0.54
2	.50	.72	4.57	7.65	5.00	6.78	2.66	1.72	1.17	.73	.55	.49
3	.50	.76	4.50	8.00	7.38	7.95	2.95	1.57	1.13	.69	.51	.47
4	.50	.80	3.43	7.58	8.04	10.18	5.06	1.47	1.08	.67	.49	.48
5	.50	.86	2.71	5.35	8.33	10.26	7.25	1.40	1.05	.66	.48	.54
6	.46	1.05	2.56	4.04	7.35	9.64	7.95	1.33	1.08	.69	.52	.53
7	.46	1.24	2.42	3.54	4.75	8.56	8.32	1.28	1.25	.71	.50	.65
8	.50	1.37	2.90	3.22	3.57	6.06	7.04	1.32	1.51	.69	.49	.80
9	.50	1.37	4.45	3.00	3.40	4.80	4.45	2.90	1.76	.67	.45	.79
10	.58	1.43	4.66	2.98	3.48	4.91	3.56	5.06	1.85	.62	.43	.64
11	.74	1.42	3.26	2.95	3.30	7.15	3.22	5.01	1.59	.60	.42	.59
12	.71	1.32	2.57	2.98	3.08	8.43	3.00	6.62	1.37	.57	.45	.54
13	.70	1.18	2.28	2.98	4.38	9.63	2.94	7.73	1.19	.62	.43	.51
14	.68	1.13	2.16	3.13	6.70	9.41	2.94	8.02	1.09	.62	.42	.48
15	.69	1.45	1.98	5.24	7.29	7.96	2.74	6.13	1.01	.59	.38	.47
16	.70	1.78	1.96	6.67	5.94	6.75	3.05	6.36	.95	.56	.36	.45
17	.71	1.83	1.95	7.23	4.26	7.25	3.79	7.76	.93	.55	.36	.46
18	.72	1.62	2.00	6.82	3.37	7.00	3.35	7.72	.90	.54	.34	.46
19	.71	1.42	1.97	6.92	3.03	5.13	2.85	5.06	.87	.53	.36	.50
20	.69	1.32	1.96	7.22	2.86	4.14	2.53	3.46	.85	.51	.34	.60
21	.66	1.30	1.96	8.56	2.70	3.73	2.32	3.12	.81	.45	.32	.78
22	.64	1.32	2.00	9.60	2.66	4.41	2.19	3.01	.88	.45	.40	.88
23	.68	1.38	2.04	10.29	2.56	6.23	2.26	2.70	.84	.43	.44	.96
24	.84	1.43	2.19	9.46	2.52	6.80	2.48	2.37	.77	.46	.44	.84
25	.91	1.70	2.40	8.13	2.53	5.68	2.37	2.09	.73	.44	.44	.75
26	.93	1.85	2.87	5.68	2.86	4.17	2.09	1.91	.72	.42	.43	.68
27	.88	1.76	4.02	4.42	4.43	3.55	1.91	1.77	.71	.43	.40	.63
28	.85	1.80	6.67	4.26	5.76	3.14	1.84	1.63	.71	.49	.59	.58
29	.84	1.84	7.55	4.24	-------	2.73	1.86	1.49	.72	.49	.60	.53
30	.80	1.92	7.70	4.14	-------	2.84	1.91	1.37	.72	.49	.63	.51
31	.76	-------	6.69	3.87	-------	2.69	-------	1.29	-------	.89	.60	-------

NOTE.—Stage-discharge relation Dec. 18-27, Dec. 29 to Jan. 4, Jan. 8 to Feb. 1, Feb. 9-12 and Feb. 22 to Mar. 1 affected by ice.

Daily discharge, in second-feet, of Cussewago Creek near Meadville, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.3	3.2	62	300	100	240	54	28	11	3.4	2.4	1.6
2	1.4	3.1	163	360	187	340	56	23	10	3.2	1.7	1.4
3	1.4	3.5	157	380	422	520	70	19	9.6	2.8	1.5	1.3
4	1.4	4.0	92	280	520	970	193	17	8.6	2.6	1.4	1.3
5	1.4	4.8	58	213	574	990	393	15	8.0	2.5	1.3	1.6
6	1.2	8.0	52	127	422	827	520	14	8.6	2.8	1.5	1.6
7	1.2	12	46	97	175	629	574	13	12	3.0	1.4	2.4
8	1.4	14	67	75	103	265	365	13	18	2.8	1.4	4.0
9	1.4	14	151	65	80	181	151	67	24	2.6	1.2	3.9
10	1.9	16	169	60	70	181	103	193	28	2.2	1.1	2.3
11	3.3	16	87	60	70	393	82	187	20	2.0	1.0	2.0
12	3.0	13	52	60	70	592	72	316	14	1.8	1.2	1.6
13	2.9	11	38	65	151	827	70	469	11	2.2	1.1	1.5
14	2.7	9.6	30	70	328	785	70	520	8.8	2.2	1.0	1.3
15	2.8	16	28	180	407	520	60	265	7.2	2.0	.9	1.3
16	2.9	26	26	240	249	340	72	295	6.2	1.8	.8	1.2
17	3.0	28	24	220	145	393	115	485	5.8	1.7	.8	1.2
18	3.1	20	24	220	92	365	92	469	5.4	1.6	.8	1.2
19	3.0	16	24	260	72	193	64	193	4.9	1.6	.8	1.4
20	2.8	13	24	380	64	133	52	97	4.6	1.5	.8	2.0
21	2.5	13	24	550	58	109	42	77	4.1	1.2	.7	3.7
22	2.3	13	26	650	50	151	38	72	5.1	1.2	1.0	5.1
23	2.7	15	28	700	48	275	40	58	4.5	1.1	1.1	6.3
24	4.5	16	30	460	46	340	50	44	3.6	1.2	1.1	4.5
25	5.5	23	38	280	46	234	44	35	3.2	1.1	1.1	3.4
26	5.8	28	55	180	50	139	35	29	3.1	1.0	1.1	2.7
27	5.1	24	95	140	70	103	29	24	3.0	1.1	1.0	2.3
28	4.6	26	328	120	140	77	28	22	3.0	1.4	2.0	1.9
29	4.5	28	400	95	-------	60	28	18	3.1	1.4	2.0	1.6
30	4.0	29	360	90	-------	64	29	14	3.1	1.4	2.3	1.5
31	3.5	-------	280	85	-------	58	-------	13	-------	5.2	2.0	-------

NOTE.—Discharge Dec. 13-27, Dec. 29 to Jan. 4, Jan. 8 to Feb. 1, Feb. 9-12 and Feb. 22 to Mar. 1 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for French Creek at Kimmeytown and Saegertown and Oil Creek near Rouseville.

Monthly discharge of Cussewago Creek near Meadville, for the year ending September 30, 1923.
(Drainage area, 88 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	5.8	1.2	2.86	0.032	0.04
November	29	3.1	15.5	.176	.20
December	400	24	98.0	1.11	1.28
January	700	60	228	2.59	2.99
February	574	46	172	1.95	2.03
March	990	58	364	4.14	4.77
April	574	28	120	1.36	1.52
May	520	13	132	1.50	1.73
June	28	3.0	8.72	.099	.11
July	5.2	1.0	2.05	.023	.03
August	2.4	.7	1.27	.014	.02
September	6.3	1.2	2.30	.026	.03
The Year	990	.7	95.6	1.09	14.75

OHIO BASIN—STATION NO. 9

FRENCH CREEK AT CARLTON

Location.—At two-span steel highway bridge, Carlton, Mercer County.

Drainage Area.—1,000 square miles.

Records Available.—April 29, 1908, to September 30, 1923. Station was officially discontinued August 31, although the observer recorded gage heights to September 26.

Gage.—Standard chain attached to downstream side of bridge; read by Charles Coefield. Elevation of gage zero 1,033.60 feet, United States Geological Survey datum.

Channel and Control.—Right bank is high and not subject to overflow; left is of medium height and overflow begins at a stage of about 10 feet. Bed is composed of sand, gravel and boulders. At low stages the flow is in several channels. Control is at a riffle at the measuring section; practically permanent.

Extremes of Discharge.—Maximum stage during the year, 9.85 feet observed at 8 a. m. March 6 (discharge, 12,200 second-feet); minimum, 0.08 foot from 8 a. m. July 28 to 5 p. m. July 30 (discharge, 78 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined below 3,000 second-feet and well defined between 3,000 and 13,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Daily Mean Gage Height, in feet, of French Creek, at Carlton, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.22	0.44	1.58	5.40	2.58	3.48	2.14	1.27	0.96	0.40	0.63	0.27
2	.21	.40	3.40	5.95	3.26	3.65	1.88	1.20	.91	.38	.62	.20
3	.20	.40	3.46	6.05	4.86	4.95	1.82	1.19	.80	.30	.63	.24
4	.20	.47	2.54	4.95	5.40	7.54	3.43	1.09	.70	.30	.47	.38
5	.18	.52	2.14	4.05	5.18	9.42	5.32	.97	.67	.30	.44	.42
6	.13	.64	1.96	3.11	4.82	9.77	6.13	.94	.64	.40	.42	.46
7	.13	.88	1.80	2.58	3.85	8.32	5.65	.90	.93	.40	.40	.55
8	.22	1.03	1.99	2.29	3.13	5.93	4.60	.92	1.16	.40	.35	.59
9	.30	.98	2.85	2.35	2.82	4.32	3.62	1.37	1.27	.33	.30	.50
10	.33	1.12	2.41	2.32	2.62	4.10	3.01	2.33	1.18	.30	.23	.44
11	.39	1.29	2.14	2.05	2.31	5.30	2.72	2.72	.96	.30	.20	.37
12	.41	1.07	1.83	2.00	2.06	6.82	2.48	3.90	.79	.30	.19	.30
13	.47	.87	1.34	1.92	2.83	7.78	2.40	5.15	.73	.30	.18	.25
14	.52	.83	1.00	2.10	4.02	7.98	2.35	4.28	.66	.30	.17	.20
15	.52	.97	1.00	3.30	3.82	6.47	2.21	3.72	.60	.30	.16	.20
16	.49	1.15	1.21	3.52	2.91	5.58	2.32	4.86	.59	.26	.16	.18
17	.48	1.31	1.26	3.60	2.58	6.08	2.60	5.90	.53	.22	.14	.18
18	.48	1.20	1.42	3.62	2.25	5.38	2.59	5.08	.51	.20	.12	.18
19	.45	1.05	1.60	3.90	2.09	4.50	2.25	4.02	.48	.18	.12	.18
20	.42	.91	1.77	4.41	2.07	3.85	2.03	2.75	.43	.18	.10	.30
21	.41	.86	1.81	6.26	2.05	3.26	1.86	2.69	.40	.16	.10	.51
22	.40	.85	1.65	7.22	1.87	3.25	1.66	2.60	.40	.14	.25	.47
23	.40	.86	1.51	7.08	2.00	4.40	1.61	2.29	.40	.12	.29	.52
24	.55	.94	1.36	6.75	2.44	5.10	1.90	2.01	.40	.12	.25	.63
25	.59	1.03	1.30	5.45	1.85	4.52	2.14	1.77	.40	.12	.22	.47
26	.62	1.30	1.59	4.50	1.78	3.50	1.77	1.56	.40	.10	.20	.40
27	.63	1.26	2.21	3.75	2.80	3.04	1.54	1.38	.42	.10	.16	-------
28	.59	1.21	4.55	3.40	3.23	2.72	1.41	1.25	.43	.08	.18	-------
29	.57	1.16	4.71	3.05	-------	2.26	1.38	1.10	.50	.08	.40	-------
30	.56	1.15	4.70	2.80	-------	2.08	1.33	1.08	.50	.08	.35	-------
31	.49	-------	4.30	2.64	-------	2.00	-------	1.00	-------	.45	.30	-------

Note.—Stage-discharge relation Dec. 16-25, Jan. 8-13, 17-19, Feb. 9-11 and Feb. 20 to Mar. 1 affected by ice. Gage height Sept. 27-30 not observed.

Daily discharge, in second-feet, of French Creek at Carlton, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	99	152	710	4,420	1,460	1,800	1,060	502	355	140	216	109
2	97	140	2,150	5,260	2,060	2,350	920	475	330	135	212	95
3	95	140	2,250	5,260	3,780	3,900	850	475	280	115	216	103
4	95	161	1,380	3,900	4,420	7,670	2,150	425	240	115	161	135
5	92	177	1,060	2,760	4,160	11,300	4,200	360	230	115	152	146
6	84	219	955	1,880	3,660	12,200	5,410	345	219	140	146	158
7	84	316	850	1,460	3,660	9,090	4,690	325	340	140	140	188
8	99	400	990	1,100	1,880	5,110	3,420	335	450	140	128	202
9	115	365	1,620	900	1,400	3,090	2,350	560	502	122	115	170
10	122	425	1,300	800	1,100	2,870	1,790	1,220	475	115	101	152
11	138	530	1,060	800	1,100	4,290	1,540	1,540	355	115	95	132
12	143	400	885	800	1,060	6,490	1,380	2,650	276	115	94	115
13	161	312	560	850	1,620	8,190	1,300	4,160	252	115	92	105
14	177	294	375	1,060	2,760	8,550	1,300	3,090	226	115	90	95
15	177	360	375	2,060	2,550	6,010	1,140	2,450	205	115	89	95
16	167	450	320	2,250	1,700	4,690	1,220	3,780	202	107	89	92
17	164	530	280	2,200	1,460	5,410	1,460	5,110	180	99	86	92
18	164	475	280	2,200	1,140	4,420	1,460	4,030	174	95	83	92
19	155	400	280	2,600	1,060	3,310	1,140	2,760	164	92	83	92
20	146	330	280	3,200	900	2,550	990	1,620	149	92	80	115
21	143	307	280	5,710	800	2,060	885	1,540	140	89	80	174
22	140	302	280	7,160	700	1,970	745	1,460	140	86	105	161
23	140	307	280	6,990	650	3,200	710	1,220	140	83	113	177
24	188	345	320	6,490	600	4,030	920	990	140	83	105	216
25	202	400	420	4,420	600	3,310	1,060	815	140	83	99	161
26	212	530	710	3,310	600	2,250	815	680	140	80	95	140
27	216	502	1,140	2,550	700	1,790	680	590	146	80	89	140
28	202	475	3,420	2,150	1,100	1,540	590	502	149	78	92	130
29	194	450	3,540	1,790	-------	1,220	590	425	170	78	140	130
30	191	450	3,540	1,620	-------	1,060	560	425	170	78	128	120
31	167	-------	3,090	1,460	-------	990	-------	375	-------	155	115	-------

Note.—Discharge Dec. 16-25, Jan. 8-13, 17-19, Feb. 9-11 and Feb. 20 to Mar. 1 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for French Creek at Kimmeytown and Saegertown and Allegheny River at Franklin. Discharge Sept. 27-30 estimated, because of no gage height record, from discharge of French Creek at Saegertown and Cussewago Creek near Meadville.

Monthly discharge of French Creek at Carlton, for the year ending September 30, 1923.

(Drainage area, 1,000 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	216	84	147	0.147	0.17
November	530	140	355	.355	.40
December	3,540	280	1,130	1.13	1.30
January	6,990	800	2,880	2.88	3.32
February	4,420	600	1,740	1.74	1.81
March	12,200	990	4,410	4.41	5.08
April	5,410	560	1,580	1.58	1.76
May	5,110	325	1,460	1.46	1.68
June	502	140	236	.236	.26
July	155	78	107	.107	.12
August	216	80	117	.117	.13
September	216	92	134	.134	.15
The Year	12,200	78	1,190	1.19	16.18

OHIO BASIN—STATION NO. 10

ALLEGHENY RIVER AT FRANKLIN

Location.—At four-span steel highway bridge, Eighth Street, Franklin, Venango County.

Drainage Area.—6,010 square miles.

Records Available.—April 1, 1905, to September 30, 1923.

Gage.—Standard chain attached to upstream side of bridge in first span from left end; read by W. C. Rivers. Elevation of gage zero 958.26 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge.

Channel and Control.—Both banks are high and do not overflow until a stage of 22 feet is reached. Bed is composed of gravel and boulders. Control is at a riffle, 200 feet long, about 1,000 feet downstream from the gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 12.59 feet observed at 1 p. m. March 5 (discharge, 69,300 second-feet); minimum, —0.26 foot at 8 a. m. August 27 (discharge, 500 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 800 and 110,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh.

Discharge measurements of Allegheny River at Franklin, during the year ending September 30, 1923.

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.ft.
19	Oct. 9	C. B. McElrath	0.06	858
20	Aug. 4	do	.42	1,410
21	Sept. 21	H. J. McIntyre	.29	1,200

Daily Mean Gage Height, in feet, of Allegheny River at Franklin, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.05	0.32	1.09	5.14	2.63	5.01	2.95	1.78	1.73	0.54	1.50	—0.15
2	.04	.28	2.44	6.42	2.91	4.24	2.68	1.84	1.57	.29	.80	—.17
3	.03	.30	3.14	5.94	4.41	4.86	2.60	1.80	1.45	.25	.56	—.19
4	.03	.32	2.58	5.04	6.05	8.88	3.21	1.63	1.32	.25	.42	—.08
5	.02	.36	2.20	4.09	5.21	12.09	5.44	1.50	1.23	.27	.41	—.09
6	.02	.50	2.22	3.45	4.43	11.23	7.47	1.41	1.15	.40	.39	.27
7	.02	.74	2.08	2.87	3.73	9.51	7.26	1.35	1.31	.44	.33	.29
8	.05	.80	2.12	2.57	3.51	7.63	6.44	1.31	1.59	.34	.19	.17
9	.11	.82	2.64	2.54	3.31	6.16	5.54	1.63	1.73	.24	.09	.03
10	.24	.90	2.79	2.43	3.01	5.60	4.75	2.25	1.63	.18	.01	—.01
11	.50	1.06	2.41	2.25	2.64	6.10	4.06	2.67	1.41	.18	—.04	.05
12	.59	1.03	2.00	2.16	2.37	7.00	3.64	4.74	1.23	.25	—.05	.03
13	.60	.90	1.66	1.95	2.76	9.76	4.02	6.85	1.08	.24	—.05	.02
14	.62	.79	1.24	1.93	3.76	9.46	3.26	5.82	.95	.22	—.09	—.03
15	.54	.96	.84	3.06	3.52	7.76	3.09	5.10	.85	.18	—.14	—.10
16	.44	1.24	.97	3.29	2.95	7.05	2.97	7.15	.76	.14	—.17	—.15
17	.39	1.38	1.16	2.95	2.75	8.33	2.96	7.41	.73	.09	—.17	—.19
18	.34	1.29	1.14	2.71	2.59	7.92	2.84	6.25	.65	.05	—.17	—.23
19	.32	1.20	.87	3.40	2.38	6.91	2.64	5.18	.59	.00	—.19	—.15
20	.29	1.03	.92	3.67	2.17	6.24	2.47	4.43	.53	—.03	—.22	—.03
21	.24	.92	1.05	6.06	2.09	5.38	2.34	4.60	.48	—.04	—.23	.31
22	.19	.86	1.17	7.49	2.17	4.92	2.23	4.54	.44	—.10	—.23	.36
23	.18	.81	1.25	6.64	3.11	5.64	2.16	4.25	.39	—.14	—.24	.29
24	.43	.86	1.26	5.93	5.63	6.75	2.24	3.95	.35	—.15	—.24	.21
25	.56	.96	1.28	5.21	5.47	6.50	2.30	3.57	.33	—.16	—.24	.12
26	.60	1.05	1.30	4.33	5.52	5.64	2.14	3.17	.31	—.16	—.25	.07
27	.62	1.05	1.66	3.85	6.19	5.04	1.98	2.81	.30	—.17	—.25	.03
28	.58	1.01	3.87	3.53	5.95	4.43	1.88	2.53	.37	—.08	—.19	.05
29	.52	1.00	5.81	3.13	-------	3.75	1.82	2.29	.41	—.05	—.13	.05
30	.46	.96	4.64	2.73	-------	3.36	1.78	2.09	.37	—.04	—.13	—.01
31	.38	-------	4.02	2.63	-------	3.22	-------	1.90	-------	.11	—.15	-------

Note.—Stage-discharge relation Dec. 16-26 and Feb. 22 to Mar. 1 affected by ice.

Daily discharge, in second-feet, of Allegheny River at Franklin, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	865	1,200	2,720	18,800	7,640	13,000	9,200	4,830	4,500	1,580	3,870	615
2	865	1,200	6,890	26,400	8,810	14,300	8,030	4,830	4,180	1,200	2,020	591
3	865	1,200	9,600	23,400	15,300	17,800	7,640	4,830	3,720	1,130	1,580	569
4	865	1,200	7,640	18,300	24,060	42,600	10,000	4,180	3,260	1,130	1,350	700
5	800	1,270	6,180	13,800	19,300	65,300	20,400	3,870	3,120	1,130	1,350	688
6	800	1,500	6,180	10,800	15,300	58,700	33,000	3,560	2,850	1,350	1,350	1,130
7	800	1,920	5,840	8,810	12,100	46,860	31,800	3,410	3,260	1,420	1,270	1,200
8	865	2,020	5,840	7,640	11,200	33,600	26,400	3,260	4,180	1,270	1,060	998
9	930	2,020	7,640	7,260	10,400	25,200	21,000	4,180	4,500	1,130	930	865
10	1,130	2,230	8,420	6,890	9,200	21,600	17,300	6,180	4,180	1,060	800	789
11	1,500	2,600	6,890	6,180	7,640	24,600	13,800	8,030	3,560	1,060	750	865
12	1,660	2,600	5,500	6,180	6,890	30,000	11,700	16,800	3,120	1,130	738	865
13	1,660	2,230	4,500	5,500	8,420	48,900	10,800	28,800	2,720	1,130	738	800
14	1,660	2,020	3,120	5,160	12,500	46,800	10,400	22,800	2,350	1,060	688	762
15	1,580	2,350	2,120	9,600	11,200	34,900	9,600	18,800	2,120	1,060	627	675
16	1,420	3,120	1,800	10,400	9,200	30,000	9,200	31,200	1,920	998	591	615
17	1,350	3,560	1,700	9,200	8,420	38,400	9,200	32,400	1,920	930	591	569
18	1,970	3,260	1,700	8,030	7,640	35,600	8,420	25,200	1,740	865	591	527
19	1,200	2,980	1,700	10,800	6,890	29,400	7,640	19,300	1,660	800	569	615
20	1,200	2,600	1,700	12,100	6,180	25,200	7,260	15,300	1,580	762	537	762
21	1,130	2,230	1,700	24,600	5,840	20,400	6,530	16,200	1,500	750	527	1,900
22	1,060	2,120	1,800	33,000	5,500	17,800	6,180	15,800	1,420	675	527	1,270
23	1,060	2,020	1,900	27,600	5,000	21,600	6,180	14,300	1,350	627	518	1,900
24	1,490	2,120	2,000	23,400	4,800	28,800	6,180	13,300	1,270	615	518	1,060
25	1,580	2,350	2,400	19,300	4,600	27,000	6,530	11,700	1,270	603	518	930
26	1,660	2,600	3,000	14,800	4,600	21,600	5,840	10,000	1,200	603	509	865
27	1,660	2,600	4,500	12,500	5,500	18,300	5,500	8,420	1,200	591	509	865
28	1,660	2,470	12,900	11,200	12,000	15,300	5,160	7,200	1,270	700	509	865
29	1,500	2,470	22,800	9,600	-------	12,500	4,830	6,530	1,350	738	639	865
30	1,420	2,350	16,300	8,030	-------	10,800	4,830	5,840	1,270	750	639	788
31	1,350	-------	13,300	7,640	-------	10,000	-------	5,160	-------	930	615	------

Note.—Discharge Dec. 16-26 and Feb. 22 to Mar. 1 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Allegheny River at Red House, Oil Creek near Rouseville and Allegheny River at Kittanning.

Monthly discharge of Allegheny River at Franklin, for the year ending September 30, 1923.
(Drainage area, 6,010 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	1,660	800	1,250	0.208	0.24
November	3,560	1,200	2,210	.368	.41
December	22,800	1,700	5,820	.968	1.12
January	33,000	5,160	13,400	2.23	2.57
February	24,000	4,660	9,500	1.58	1.64
March	65,300	10,000	28,600	4.76	5.49
April	33,000	4,830	11,400	1.90	2.12
May	32,400	3,260	12,100	2.01	2.32
June	4,500	1,200	2,450	.408	.46
July	1,580	591	961	.160	.18
August	3,870	509	906	.151	.17
September	1,270	527	837	.139	.16
The Year	65,300	509	7,480	1.24	16.88

OHIO BASIN—STATION NO. 11

CLARION RIVER NEAR CLARION

Location.—At single-span steel highway bridge, known as Toby Bridge, about one mile north of Clarion, Clarion County.

Drainage Area.—930 square miles.

Records Available.—November 17, 1884, to June 30, 1923, when the station was discontinued.

Gage.—Standard chain attached to downstream side of bridge; read by B. O. Cyphert. Elevation of gage zero 1,052.00 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel, boulders and ledge. Control is at the first of a series of riffles about 800 feet downstream from the gage; permanent.

Extremes of Discharge.—Maximum stage during the period 10.00 feet observed at 8 a. m. March 5 and 10.00 feet, estimated from hydrograph, at noon May 13 (discharge, 19,000 second-feet); minimum, —0.40 foot from 8 a. m. October 1 to 8 a. m. October 8 (discharge 116 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 100 and 30,000 second-feet. Gage read to hundredths twice daily. Results good.

Daily Mean Gage Height, in feet, of Clarion River near Clarion, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	—0.40	—0.10	0.30	3.88	1.82	8.35	1.90	1.64	1.44			
2	— .40	— .10	.62	4.90	1.91	7.57	1.67	1.42	1.26			
3	— .40	— .10	1.52	3.78	3.70	7.79	1.92	1.23	1.33			
4	— .40	— .10	1.45	3.48	4.28	8.02	2.19	1.17	1.34			
5	— .40	— .10	1.34	3.05	3.50	8.86	2.79	1.17	1.16			
6	— .40	.00	2.48	2.70	3.11	6.47	4.66	1.14	1.14			
7	— .40	.10	1.87	2.40	2.78	4.94	4.16	1.07	1.06			
8	— .35	.25	2.12	2.37	2.75	4.23	3.60	1.09	1.07			
9	— .20	.48	2.61	2.28	2.65	3.62	3.33	1.38	2.07			
10	.00	.40	2.50	2.20	2.58	3.59	2.95	2.07	1.66			
11	.00	.40	1.90	2.24	2.05	4.85	2.72	2.39	1.04			
12	.93	.36	1.75	2.32	1.92	5.76	2.51	5.05	.86			
13	.56	.28	1.75	3.28	2.08	6.86	2.35	9.07	.82			
14	.30	.23	1.30	5.34	3.35	5.54	2.25	6.45	.76			
15	.10	.28	1.25	6.30	3.89	4.47	2.08	5.07	.72			
16	.05	.53	2.70	5.10	6.54	4.41	2.01	4.26	.53			
17	.00	1.24	3.00	3.35	8.30	5.07	2.06	3.82	.46			
18	.00	.90	2.83	5.19	8.10	4.28	1.87	3.54	.46			
19	.00	.70	2.61	4.41	7.87	4.07	1.77	3.31	.45			
20	— .05	.63	2.57	4.12	7.70	3.33	1.69	3.11	.34			
21	— .10	.50	2.50	5.94	7.70	3.33	1.56	4.00	.26			
22	— .10	.46	2.50	5.50	7.70	3.19	1.47	4.76	.23			
23	— .20	.40	2.50	4.85	7.45	3.77	1.47	3.86	.16			
24	.00	.40	2.50	4.05	7.17	4.72	1.47	3.14	.16			
25	.00	.42	2.50	3.61	6.72	4.25	1.45	2.46	.20			
26	.10	.45	2.50	3.16	7.22	3.67	1.39	2.18	.26			
27	.20	.50	2.36	2.86	7.59	3.34	1.24	2.11	.25			
28	.20	.45	2.90	2.68	7.57	2.97	1.19	2.06	.19			
29	.00	.30	4.23	2.43	-------	2.63	1.26	2.05	.26			
30	— .10	.30	3.62	2.20	-------	2.33	1.65	1.82	.26			
31	— .10	-------	2.81	1.98	-------	1.97	-------	1.58	-------	-------	-------	-------

Note.—Stage-discharge relation Dec. 12, 13, 15-27, Jan. 8-20, Feb. 6-11 and Feb. 14 to Mar. 4 affected by ice. Station discontinued June 30, 1923.

Daily discharge, in second-feet, of Clarion River near Clarion, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	116	165	258	3,410	1,000	2,260	1,080	885	754			
2	116	165	349	5,270	1,080	3,400	885	722	638			
3	116	165	785	3,260	3,110	5,000	1,080	638	694			
4	116	165	754	2,830	4,080	8,000	1,340	585	694			
5	116	165	694	2,180	2,830	15,700	1,950	585	585			
6	116	184	1,630	1,840	2,000	9,100	4,850	585	585			
7	116	206	1,040	1,530	1,700	5,270	3,900	535	535			
8	124	244	1,250	1,300	1,400	3,900	2,970	560	535			
9	148	316	1,730	1,200	1,200	2,970	2,560	722	1,250			
10	184	286	1,630	1,100	1,200	2,970	2,180	1,250	885			
11	184	286	1,080	1,000	1,100	5,060	1,840	1,530	535			
12	488	272	900	900	1,080	7,340	1,630	5,490	445			
13	332	258	750	900	1,250	10,100	1,530	16,300	425			
14	258	244	665	1,100	2,200	6,620	1,340	8,840	405			
15	206	258	550	1,800	2,000	4,450	1,250	5,710	385			
16	195	332	500	2,000	1,700	4,260	1,160	4,080	332			
17	184	638	440	2,000	1,400	5,710	1,250	3,260	301			
18	184	465	420	1,600	1,200	4,080	1,040	2,830	301			
19	184	385	420	1,600	1,100	3,730	960	2,560	301			
20	174	367	400	2,400	950	2,560	920	2,300	272			
21	165	316	400	7,590	850	2,560	818	3,570	244			
22	165	301	400	6,620	800	2,430	754	5,060	244			
23	148	286	420	5,060	750	3,260	754	3,410	218			
24	184	286	440	3,570	700	4,850	754	2,300	218			
25	184	286	460	2,970	700	3,900	754	1,630	231			
26	206	301	500	2,430	700	3,110	722	1,340	244			
27	231	316	850	2,060	1,000	2,560	638	1,250	244			
28	231	301	2,060	1,840	1,500	2,180	610	1,250	231			
29	184	258	3,900	1,530	-------	1,730	638	1,160	244			
30	165	258	2,970	1,340	-------	1,430	885	1,000	244			
31	165	-------	1,950	1,160	-------	1,120	-------	850	-------	-------	-------	-------

Note.—Discharge Dec. 12, 13, 15-27, Jan. 8-20, Feb. 6-11 and Feb. 14 to Mar. 4 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Tionesta Creek at Butler Bridge, French Creek at Carlton, Allegheny River at Franklin and Red Bank Creek at Saint Charles. Station discontinued June 30, 1923.

Monthly discharge of Clarion River near Clarion, for the year ending September 30, 1923.
(Drainage area, 930 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	488	116	183	0.197	0.23
November	638	165	282	.303	.34
December	3,900	258	987	1.06	1.22
January	7,590	900	2,430	2.61	3.01
February	4,080	700	1,450	1.56	1.62
March	15,700	1,120	4,570	4.91	5.66
April	4,850	610	1,430	1.54	1.72
May	16,300	535	2,670	2.87	3.31
June	1,250	218	441	.474	.53
July					
August					
September					

Note.—Station discontinued June 30, 1923.

OHIO BASIN—STATION NO. 12

RED BANK CREEK AT SAINT CHARLES

Location.—At single-span steel railroad bridge, Saint Charles, Clarion County.

Drainage Area.—540 square miles.

Records Available.—October 19, 1909, to September 30, 1923.

Gage.—Standard chain attached to upstream side of bridge; read by Forest Bish. Elevation of gage zero 976.24 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of rocks and fairly regular. Control is at the first of a series of riffles, where the bed is composed of large boulders and ledge, about 200 feet downstream from the gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 9.2 feet at 4 a. m. May 13 (discharge, about 12,700 second-feet); minimum, 0.83 foot at 8.30 a. m. October 1 (discharge, 29 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 1,000 second-feet and fairly well defined between 1,000 and 10,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

The following discharge measurement was made by C. B. McElrath: No. 31, August 6: Gage height, 1.23 feet; discharge, 85.0 second-feet.

Daily Mean Gage Height, in feet, of Red Bank Creek at Saint Charles, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.84	1.07	1.19	4.17	2.49	3.52	2.31	1.72	2.20	1.26	1.34	1.00
2	.94	1.16	1.44	4.77	2.69	3.43	2.32	1.92	2.02	1.36	1.31	.98
3	.94	1.17	1.66	4.86	4.38	4.15	2.38	2.15	1.73	1.21	1.29	1.06
4	.88	1.17	1.62	4.67	4.17	5.95	2.34	2.04	1.62	1.22	1.27	1.06
5	.94	1.21	1.74	4.21	3.88	6.29	3.09	1.95	1.58	1.21	1.26	1.04
6	.91	1.24	2.95	4.15	3.76	5.21	3.22	1.96	1.49	1.23	1.23	1.02
7	.95	1.15	3.25	3.69	3.58	4.35	3.10	1.91	1.62	1.53	1.26	1.08
8	1.03	1.21	3.40	2.53	3.42	3.26	3.19	1.88	1.68	1.41	1.21	1.11
9	.94	1.23	3.10	2.34	3.15	3.05	2.93	2.15	1.64	1.38	1.17	1.14
10	1.08	1.26	2.68	2.39	2.95	3.48	2.83	2.06	1.62	1.37	1.18	1.09
11	1.14	1.23	2.42	2.38	2.47	4.42	2.71	2.55	1.67	1.41	1.15	1.11
12	1.14	1.30	2.41	2.42	2.15	5.58	2.71	6.21	1.59	1.39	1.14	1.06
13	1.17	1.28	2.30	2.42	2.30	4.56	2.66	8.83	1.52	1.40	1.11	1.08
14	1.14	1.30	2.22	3.09	2.38	4.28	2.63	7.06	1.49	1.48	1.10	1.13
15	1.14	1.39	2.21	4.78	2.27	4.05	2.56	5.24	1.45	1.45	1.12	1.14
16	1.19	1.38	2.02	4.05	2.10	3.92	2.53	4.55	1.46	1.39	1.06	1.09
17	1.21	1.36	1.82	3.90	2.15	3.62	2.61	4.31	1.41	1.32	.95	1.02
18	1.17	1.31	1.74	3.88	2.18	3.52	2.66	4.10	1.39	1.22	.97	1.05
19	1.17	1.30	1.71	3.62	2.10	3.42	2.48	3.60	1.32	1.17	1.05	.97
20	.98	1.24	1.82	3.67	2.06	3.48	2.38	3.10	1.31	1.12	1.09	1.22
21	1.05	1.26	1.76	5.55	2.06	3.45	2.27	4.73	1.39	1.07	1.06	1.21
22	1.07	1.24	1.69	5.40	2.12	3.38	2.21	4.50	1.37	1.11	1.09	1.24
23	1.14	1.24	1.66	4.51	2.04	3.31	2.19	4.16	1.39	1.09	1.11	1.18
24	1.21	1.21	1.58	4.16	2.12	3.49	2.19	3.85	1.54	1.11	1.18	1.21
25	1.22	1.28	1.74	4.06	2.28	3.56	2.17	3.51	1.49	1.06	1.16	1.19
26	1.21	1.23	1.62	3.82	2.38	3.28	2.05	3.15	1.44	1.25	1.11	1.17
27	1.31	1.25	1.76	3.55	3.40	3.21	2.02	2.95	1.38	1.28	1.09	1.21
28	1.32	1.25	2.29	3.04	3.56	3.21	1.92	2.41	1.33	1.32	1.11	1.12
29	1.21	1.10	4.95	3.08	-------	3.19	1.80	2.40	1.32	1.25	1.09	1.14
30	1.16	1.08	4.69	2.78	-------	2.90	1.82	2.30	1.31	1.30	1.07	1.08
31	1.09	-------	3.68	2.57	-------	2.62	-------	2.20	-------	1.32	.99	-------

Note.—Stage-discharge relation Dec. 11-26, Jan. 2-8, 16-19, 24-27 and Feb. 5-11 affected by ice.

Daily discharge, in second-feet, of Red Bank Creek at Saint Charles, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	30	66	93	2,330	635	1,440	520	242	466	110	130	52
2	43	86	157	3,000	760	1,330	520	322	368	135	122	49
3	43	88	224	3,000	2,630	2,330	576	441	261	98	118	64
4	35	88	207	1,900	2,330	5,450	548	392	207	100	112	64
5	43	98	261	1,000	1,500	6,060	1,050	345	207	98	110	60
6	38	105	932	650	1,000	3,930	1,140	345	172	102	102	56
7	44	84	1,140	550	850	2,630	1,050	322	207	191	110	68
8	58	98	1,330	500	650	1,230	1,140	322	242	148	98	74
9	43	102	1,050	548	550	970	932	441	224	140	88	81
10	68	110	760	570	460	1,440	860	392	207	138	90	70
11	81	102	460	570	420	2,630	760	666	224	148	84	74
12	81	120	320	570	441	4,670	760	5,850	207	142	81	64
13	88	115	240	576	520	2,930	728	11,800	175	145	74	68
14	81	120	180	1,050	576	2,480	728	7,750	172	169	72	79
15	81	142	140	3,250	493	2,050	666	3,930	160	160	77	81
16	93	140	120	1,800	416	1,920	666	2,930	163	142	64	70
17	93	135	110	1,300	441	1,550	696	2,480	148	125	44	56
18	88	122	110	1,200	466	1,440	728	2,190	142	100	48	62
19	88	120	100	1,300	416	1,330	635	1,550	125	88	62	48
20	49	105	100	1,670	392	1,440	576	1,050	122	77	70	100
21	62	110	100	4,670	392	1,330	493	3,090	142	66	64	58
22	66	105	110	4,290	416	1,320	466	2,780	138	74	70	105
23	81	105	120	2,780	392	1,230	466	2,330	142	70	74	90
24	98	98	130	1,900	416	1,330	466	1,790	191	74	90	98
25	100	115	140	1,300	520	1,550	441	1,440	172	64	86	93
26	98	102	180	1,100	576	1,230	392	1,140	157	108	74	88
27	122	108	261	1,000	1,330	1,140	368	932	140	115	70	98
28	125	108	520	970	1,550	1,140	322	576	128	125	74	77
29	98	72	3,580	1,050	-------	1,140	280	576	125	108	70	81
30	86	68	3,090	826	-------	895	280	520	122	120	66	68
31	70	-------	1,670	666	-------	696	-------	466	-------	125	50	-------

Note.—Discharge Dec. 11-26, Jan. 2-8, 16-19, 24-27 and Feb. 5-11 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Clarion River near Clarion, Mahoning Creek near Dayton and Crooked Creek at Hileman's Farm.

Monthly discharge of Red Bank Creek at Saint Charles, for the year ending September 30, 1923.
(Drainage area, 540 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	125	30	73.5	0.136	0.16
November	142	66	105	.194	.22
December	3,580	93	579	1.07	1.23
January	4,670	500	1,550	2.87	3.29
February	2,630	392	769	1.42	1.48
March	6,060	696	2,010	3.72	4.29
April	1,140	280	642	1.19	1.33
May	11,800	242	1,920	3.56	4.10
June	466	122	189	.350	.39
July	191	64	116	.215	.25
August	130	44	82.1	.152	.18
September	105	48	74.5	.138	.15
The Year	11,800	30	679	1.26	17.07

OHIO BASIN—STATION NO. 13

MAHONING CREEK NEAR DAYTON

Location.—At single-span steel highway bridge, known as Independence Bridge, about three miles northwest of Dayton, Armstrong County.

Drainage Area.—322 square miles.

Records Available.—August 12, 1916, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by La Vern Mathews.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and boulders. Control for low stages is at the first of a series of riffles about 50 feet downstream from the gage; practically permanent; for high stages a dam about one mile downstream.

Extremes of Discharge.—Maximum stage during the year, 8.84 feet observed at 8 a. m. May 13 (discharge, about 8,100 second-feet); minimum, 1.34 feet at 4 p. m. August 20 (discharge, 12 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 40 and 1,500 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for extreme stages when they are fair.

The following discharge measurement was made by C. B. McElrath: No. 15, August 6: Gage height, 2.62 feet; discharge, 376 second-feet.

Daily Mean Gage Height, in feet, of Mahoning Creek near Dayton, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.64	1.74	1.76	4.32	2.75	3.10	2.61	2.89	2.25	1.83	2.68	1.81
2	1.63	1.74	1.79	4.02	4.10	3.34	2.58	2.80	2.23	1.81	2.57	1.75
3	1.62	1.74	1.79	3.48	5.39	3.80	2.62	2.76	2.23	1.79	2.50	1.71
4	1.62	1.74	1.79	3.20	4.48	4.10	2.83	2.69	2.20	1.77	2.43	1.73
5	1.62	1.74	1.81	2.87	3.94	3.65	3.08	2.63	2.15	1.77	2.95	2.02
6	1.62	1.75	2.45	2.74	3.64	3.30	3.09	2.54	2.15	1.91	2.68	2.23
7	1.62	1.82	2.60	2.58	3.46	3.06	3.04	2.40	2.19	1.93	2.58	2.36
8	1.65	1.88	2.10	2.58	2.87	2.81	2.96	2.46	2.33	1.98	2.45	2.24
9	1.73	1.87	2.37	2.56	2.69	3.06	2.85	2.73	2.21	2.09	2.35	2.10
10	1.85	1.80	2.59	2.56	2.56	3.40	2.79	2.90	2.09	2.27	2.18	2.02
11	2.02	1.80	2.46	2.54	2.47	3.96	2.70	3.10	2.04	2.20	2.05	1.98
12	2.02	1.80	2.28	2.44	2.66	5.01	2.65	6.43	2.01	2.05	1.97	1.95
13	1.83	1.80	1.99	2.30	2.81	4.90	2.59	8.20	2.01	1.92	1.84	1.90
14	1.75	1.81	1.93	2.31	4.01	4.40	2.57	5.45	1.99	1.89	1.73	1.83
15	1.70	1.88	1.93	3.88	4.34	3.75	2.55	4.24	1.99	1.83	1.65	1.78
16	1.70	2.24	1.91	4.24	3.31	3.35	2.78	3.33	1.99	1.79	1.53	1.73
17	1.71	2.11	1.89	3.50	2.68	3.05	2.86	3.24	1.97	1.74	1.50	1.72
18	1.70	2.00	1.87	3.11	2.38	3.00	2.79	3.49	1.93	1.72	1.44	1.68
19	1.70	1.96	1.87	3.74	2.40	3.09	2.71	3.20	1.93	1.71	1.37	1.63
20	1.69	1.96	1.87	4.08	2.45	2.88	2.69	3.18	1.91	1.66	1.35	1.81
21	1.68	1.92	1.85	5.44	2.56	2.73	2.66	3.84	1.89	1.64	1.68	1.93
22	1.68	1.87	1.85	4.88	2.46	3.03	2.63	3.44	1.86	1.64	1.70	1.90
23	1.73	1.82	1.85	3.67	2.40	3.25	2.56	3.29	1.83	1.64	1.72	1.87
24	1.90	1.77	1.85	3.34	2.37	3.60	2.49	3.04	1.82	1.70	1.75	1.82
25	1.90	1.77	1.85	3.26	2.58	3.85	2.44	2.79	1.93	1.66	1.71	1.79
26	1.84	1.77	1.83	3.17	3.07	3.80	2.39	2.62	2.05	1.63	1.68	1.73
27	1.76	1.77	1.92	3.04	3.55	3.50	2.34	2.53	1.99	1.62	1.83	1.70
28	1.76	1.73	3.02	2.96	3.25	3.25	2.52	2.49	1.93	2.54	2.49	1.67
29	1.75	1.73	3.80	2.90	-------	3.00	3.89	2.41	1.93	2.61	2.28	1.64
30	1.74	1.73	3.27	2.80	-------	2.85	3.44	2.36	1.88	4.68	2.09	1.64
31	1.74	-------	2.72	2.78	-------	2.66	-------	2.29	-------	4.75	1.94	-------

Note.—Stage-discharge relation Feb. 6-12, 14, 15 and 19-24 affected by ice.

Daily discharge, in second-feet, of Mahoning Creek near Dayton, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	30	41	44	1,690	413	630	330	500	170	56	385	52
2	29	41	48	1,390	1,490	813	330	440	162	52	305	42
3	28	41	48	935	2,950	1,200	330	413	162	48	280	36
4	28	41	48	700	1,890	1,490	470	385	150	46	245	40
5	28	41	52	470	1,340	1,060	630	358	135	46	530	96
6	28	42	255	413	900	775	630	305	135	72	385	162
7	28	54	330	330	550	595	595	230	147	76	330	214
8	30	66	120	330	380	440	530	260	202	86	255	166
9	40	64	218	305	300	595	470	413	154	117	210	120
10	60	50	330	305	280	850	440	500	117	178	144	96
11	96	50	260	305	260	1,340	385	630	102	150	105	86
12	96	50	182	250	280	2,450	358	4,390	93	105	84	80
13	56	50	88	190	440	2,330	330	7,160	93	74	58	70
14	42	52	76	194	800	1,790	305	2,950	88	68	40	56
15	35	66	76	1,300	1,000	1,160	305	1,590	88	56	30	47
16	35	166	72	1,590	775	813	440	813	88	48	21	40
17	36	123	68	935	385	595	470	738	84	41	19	38
18	35	90	64	630	222	560	440	935	76	38	16	33
19	35	82	64	1,160	220	630	385	700	76	36	13	29
20	34	82	64	1,490	200	500	385	700	72	31	12	52
21	33	74	60	2,950	200	413	358	1,250	68	30	33	76
22	33	64	60	2,330	200	595	358	892	62	30	35	70
23	40	54	60	1,060	200	738	305	775	56	30	38	64
24	70	46	60	813	220	1,020	275	595	54	35	42	54
25	70	46	60	738	330	1,250	250	440	76	31	36	48
26	58	46	56	665	595	1,200	226	330	105	29	33	40
27	44	46	74	595	977	935	206	305	88	28	56	35
28	44	40	560	530	738	738	280	275	76	305	275	32
29	42	40	1,200	500	-------	560	1,300	235	76	330	182	30
30	41	40	738	440	-------	470	892	214	66	2,110	117	30
31	41	-------	385	440	-------	358	-------	186	-------	2,220	78	-------

Note.—Discharge Feb. 6-12, 14, 15 and 19-24 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Oil Creek near Rouseville, Red Bank Creek at Saint Charles, Blacklick Creek at Blacklick and West Branch Susquehanna River at Bower.

Monthly discharge of Mahoning Creek near Dayton, for the year ending September 30, 1923.
(Drainage area, 322 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	96	28	43.4	0.135	0.16
November	166	40	59.6	.185	.21
December	1,200	44	188	.584	.67
January	2,950	190	838	2.60	3.00
February	2,950	200	662	2.06	2.14
March	2,450	358	932	2.89	3.33
April	1,300	206	434	1.35	1.51
May	7,160	186	965	3.00	3.46
June	202	54	104	.323	.36
July	2,220	28	213	.661	.76
August	530	12	142	.441	.51
September	214	29	67.8	.211	.24
The Year	7,160	12	387	1.20	16.35

OHIO BASIN—STATION NO. 14

ALLEGHENY RIVER AT KITTANNING

Location.—At five-span steel highway bridge, Market Street, Kittanning, Armstrong County.

Drainage Area.—9,010 square miles.

Records Available.—August 18, 1904, to September 30, 1923.

Gage.—Standard chain attached to upstream side of bridge; read by H. L. Sheakley. Elevation of gage zero 764.45 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel. Control is at a riffle about 500 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 17.4 feet at 10 p. m. March 5 (discharge, 101,000 second-feet); minimum, 1.20 feet at 9 a. m. August 26 (discharge, 670 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 800 and 250,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of Allegheny River at Kittanning, during the year ending September 30, 1923.

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.ft.
57	Aug. 6	C. B. McElrath	2.51	2,360
58	Sept. 21	H. J. McIntyre	1.75	1,170

Daily Mean Gage Height, in feet, of Allegheny River at Kittanning, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.42	1.97	2.73	7.99	5.58	7.20	5.77	4.49	4.35	2.14	2.85	1.49
2	1.42	1.89	2.79	10.38	5.85	7.70	5.55	4.37	4.12	2.11	3.31	1.44
3	1.42	1.84	3.79	9.92	6.50	8.86	5.37	4.35	3.87	2.03	3.03	1.48
4	1.41	1.81	5.41	9.10	9.28	12.28	5.42	4.22	3.72	2.00	2.69	1.43
5	1.40	1.79	4.98	7.88	9.30	16.18	6.85	3.99	3.52	2.06	2.34	1.36
6	1.39	1.84	4.85	6.95	8.35	16.22	10.07	3.75	3.47	2.58	2.36	1.44
7	1.38	2.01	4.74	6.25	7.42	14.26	10.57	3.65	3.47	2.37	2.36	1.63
8	1.45	2.32	4.60	5.68	6.85	12.52	10.02	3.59	3.57	2.28	2.21	1.76
9	1.52	2.46	4.85	5.45	6.50	-------	9.19	3.77	3.77	2.16	2.03	1.82
10	1.69	2.59	5.62	5.28	6.20	-------	8.27	4.19	4.05	2.04	1.84	1.82
11	1.81	2.61	5.22	5.12	5.65	11.91	7.45	5.01	3.89	2.01	1.61	1.69
12	1.97	2.78	4.95	4.75	5.28	12.48	6.82	8.98	3.59	2.00	1.56	1.60
13	2.28	2.83	4.35	4.58	5.65	13.60	6.29	15.11	3.37	2.18	1.58	1.66
14	2.45	2.71	3.88	4.93	7.35	14.36	6.15	12.72	3.18	2.09	1.54	1.57
15	2.32	2.69	3.35	6.79	7.32	12.60	5.95	10.53	3.10	2.02	1.50	1.51
16	2.27	2.76	2.95	7.52	6.52	10.68	5.99	10.40	2.90	2.01	1.46	1.45
17	2.13	3.10	2.98	6.85	5.50	11.13	6.15	11.66	2.71	1.88	1.41	1.39
18	2.01	3.56	2.95	6.18	4.92	11.49	5.87	10.69	2.62	1.75	1.36	1.35
19	1.92	3.28	3.24	6.55	4.72	10.78	5.67	9.24	2.50	1.72	1.31	1.35
20	1.86	3.10	2.86	7.07	4.80	9.94	5.39	8.37	2.42	1.60	1.30	1.41
21	1.82	2.92	3.03	10.14	4.92	8.95	5.12	8.22	2.31	1.55	1.28	1.79
22	1.79	2.78	3.09	13.00	4.92	8.19	4.95	8.82	2.24	1.48	1.27	2.17
23	1.79	2.72	3.20	11.94	4.98	8.49	4.75	8.39	2.18	1.43	1.26	2.23
24	1.83	2.62	3.26	10.40	4.55	9.82	4.62	7.69	2.12	1.40	1.25	2.31
25	1.87	2.57	3.38	9.40	4.05	10.41	4.65	7.12	2.59	1.38	1.28	2.10
26	2.04	2.64	3.48	8.25	3.98	9.62	4.69	6.52	2.24	1.33	1.21	1.90
27	2.27	2.76	3.58	7.32	5.85	8.75	4.49	6.02	2.11	1.32	1.25	1.76
28	2.28	2.83	4.48	6.98	6.94	7.95	4.32	5.62	2.13	1.52	1.31	1.66
29	2.28	2.75	9.76	6.75	-------	7.22	4.45	5.25	2.15	1.91	1.36	1.60
30	2.23	2.73	9.10	6.10	-------	6.62	4.62	4.85	2.16	2.02	1.55	1.57
31	2.11	-------	7.74	5.65	-------	6.22	-------	4.59	-------	3.74	1.60	-------

Note.—Stage-discharge relation Dec. 16-26 and Feb. 19-25 affected by ice. Gage height Mar 9 and 10 not observed.

Daily discharge, in second-feet, of Allegheny River at Kittanning, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	880	1,530	2,850	25,200	11,900	20,200	12,800	7,260	6,960	1,810	3,060	990
2	880	1,460	3,060	41,400	12,800	23,300	11,900	6,960	6,100	1,760	4,160	935
3	880	1,400	5,340	37,900	16,200	31,000	11,000	6,960	5,580	1,680	3,490	990
4	880	1,340	11,000	32,400	33,700	55,300	11,000	6,380	5,080	1,600	2,850	935
5	880	1,340	9,200	24,500	33,700	88,900	17,800	5,840	4,620	1,680	2,100	827
6	880	1,400	8,380	19,000	27,800	88,900	39,300	5,340	4,620	2,640	2,160	935
7	880	1,600	7,980	14,800	21,400	71,700	42,900	4,850	4,620	2,160	2,160	1,160
8	935	2,080	7,600	12,400	17,800	56,800	38,600	4,850	4,850	2,080	1,920	1,280
9	990	2,350	8,380	11,000	16,200	55,000	33,000	5,340	5,340	1,840	1,680	1,340
10	1,220	2,640	11,900	11,000	14,800	50,000	27,100	6,380	5,840	1,680	1,400	1,340
11	1,340	2,640	10,100	9,640	11,900	52,300	21,400	9,200	5,580	1,600	1,100	1,220
12	1,530	3,060	9,200	8,380	10,500	56,800	17,800	31,700	4,850	1,600	1,040	1,100
13	2,080	3,060	6,960	7,600	11,900	65,700	15,300	78,800	4,390	1,920	1,100	1,160
14	2,350	2,850	5,580	8,780	21,400	72,600	14,800	58,400	3,940	1,760	1,040	1,040
15	2,080	2,850	4,390	17,800	20,800	57,600	13,800	42,200	3,720	1,600	990	990
16	2,000	3,060	3,000	22,000	16,200	43,600	13,800	41,400	3,270	1,600	935	935
17	1,840	3,720	2,600	17,800	11,400	46,400	14,800	50,800	2,850	1,460	880	880
18	1,600	4,850	2,600	14,800	8,780	49,500	13,300	43,600	2,640	1,280	827	827
19	1,460	4,160	2,600	16,800	7,500	44,300	12,400	33,000	2,440	1,220	775	827
20	1,400	3,720	2,600	19,600	7,600	37,900	11,000	27,800	2,260	1,100	775	880
21	1,340	3,270	2,600	39,300	6,500	31,700	9,640	26,400	2,080	1,040	775	1,340
22	1,340	3,060	2,800	60,800	6,500	26,400	9,200	30,400	2,000	990	722	1,840
23	1,340	2,850	3,000	52,300	6,000	28,400	8,380	27,800	1,920	935	722	2,000
24	1,400	2,640	3,400	41,400	6,000	37,200	7,600	23,300	1,760	880	722	2,080
25	1,400	2,640	3,890	34,400	5,500	41,400	7,600	19,600	2,600	880	775	1,760
26	1,680	2,640	4,200	26,400	5,840	35,800	7,980	16,200	2,000	827	670	1,460
27	2,000	3,060	4,850	20,800	12,800	30,400	7,260	13,800	1,760	775	722	1,280
28	2,080	3,060	7,260	19,000	18,400	25,200	6,600	11,900	1,840	900	775	1,160
29	2,080	3,060	37,200	17,800	-------	20,200	6,900	10,100	1,840	1,460	827	1,100
30	2,000	2,850	32,400	14,300	-------	16,800	7,600	8,380	1,840	1,600	1,040	1,040
31	1,760	-------	23,300	11,900	-------	14,800	-------	7,000	-------	5,080	1,100	-------

Note.—Discharge Dec. 16-26 and Feb. 19-25 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Allegheny River at Franklin. Discharge Mar. 9 and 10 estimated, because of no gage height record, from discharge of Allegheny River at Franklin.

Monthly discharge of Allegheny River at Kittanning, for the year ending September 30, 1923.

(Drainage area, 9,010 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	2,350	880	1,460	0.162	0.19
November	4,850	1,340	2,670	.296	.33
December	37,200	2,600	8,070	.896	1.03
January	60,800	7,600	22,900	2.54	2.93
February	33,700	5,500	14,300	1.59	1.66
March	88,900	14,800	44,400	4.93	5.68
April	42,900	6,660	15,800	1.75	1.95
May	78,800	4,850	21,700	2.41	2.78
June	6,960	1,760	3,640	.404	.45
July	5,080	775	1,600	.178	.21
August	4,160	670	1,400	.155	.18
September	2,080	827	1,190	.132	.15
The Year	88,900	670	11,600	1.29	17.54

OHIO BASIN—STATION NO. 15

CROOKED CREEK AT HILEMAN'S FARM

Location.—At single-span steel highway bridge, about three and one-half miles south of Ford City, at Hileman's Farm, Armstrong County.

Drainage Area.—279 square miles.

Records Available.—October 16, 1909, to September 30, 1923.

Gage.—Standard chain attached to upstream side of bridge; read by D. S. Smeltzer.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Left bank is high and not subject to overflow; right is low and becomes inundated at a stage of about 8 feet. Bed is composed of gravel and rock. Control is at a riffle about 300 feet downstream from the gage; practically permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 9.6 feet at 5 a. m. May 13 (discharge, about 9,540 second-feet); minimum, 0.72 foot on October 2, 3 and 6 (discharge, 3.6 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 500 second-feet and fairly well defined between 500 and 5,500 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

The following discharge measurement was made by C. B. McElrath: No. 33, August 6: Gage height, 2.09 feet; discharge, 196 second-feet.

Daily Mean Gage Height, in feet, of Crooked Creek at Hileman's Farm, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.76	0.94	1.08	3.63	2.95	4.85	1.82	2.72	1.63	1.59	3.71	1.52
2	.72	.88	1.10	3.84	3.75	3.32	1.98	2.46	1.57	1.49	2.99	1.43
3	.72	.85	1.09	3.25	3.75	2.57	1.94	2.26	1.50	1.43	2.75	1.39
4	.74	.92	1.00	2.75	3.62	2.98	1.98	2.13	1.54	1.37	2.55	1.38
5	.76	.86	1.10	2.50	3.07	3.15	2.17	2.06	1.52	1.40	2.27	1.57
6	.72	.92	1.72	2.33	2.78	2.95	2.43	1.97	1.45	1.97	2.13	2.56
7	.74	1.01	1.76	2.24	2.59	2.68	2.31	1.88	1.78	2.78	2.02	2.15
8	.78	1.07	1.75	2.20	2.59	2.62	2.18	1.85	2.67	2.12	1.87	1.95
9	.80	1.22	1.97	2.25	2.25	2.57	2.11	2.14	2.20	1.82	1.69	2.44
10	1.00	1.20	1.90	2.44	2.28	3.25	1.93	2.33	1.90	1.68	1.52	2.05
11	1.04	1.17	1.70	2.42	2.52	4.72	1.94	2.59	1.72	2.30	1.55	1.85
12	1.24	1.10	1.60	2.35	2.62	4.50	1.85	6.03	1.64	2.17	1.48	1.72
13	.91	.98	1.60	2.15	4.09	4.45	1.77	8.51	1.60	1.87	1.42	1.57
14	1.14	1.05	1.60	3.28	4.74	3.68	2.09	4.98	1.58	1.70	1.52	1.49
15	1.02	1.20	1.56	6.30	3.32	3.12	2.64	3.68	1.56	1.58	1.40	1.45
16	.90	1.13	1.55	4.27	3.11	2.92	3.08	3.44	1.58	1.92	1.37	1.47
17	.92	1.24	1.87	3.30	3.16	2.75	3.12	3.42	1.48	1.98	1.52	1.40
18	1.00	1.32	2.10	3.01	4.38	2.56	2.81	2.92	1.41	1.65	1.20	1.33
19	.90	1.36	2.06	3.70	4.10	2.34	2.61	2.68	1.32	1.46	1.20	1.30
20	.82	1.32	1.82	3.30	3.75	2.41	2.43	2.77	1.28	1.34	1.20	1.29
21	.90	1.24	1.65	4.40	3.60	2.34	2.27	3.50	1.23	1.55	1.20	1.55
22	.86	1.24	1.45	5.32	3.55	2.25	2.18	3.30	1.20	1.23	1.19	1.62
23	.84	1.22	1.30	3.80	3.20	2.60	2.11	2.91	1.19	1.16	1.35	1.50
24	.86	1.11	1.43	3.13	2.95	3.64	2.04	2.65	1.16	1.10	1.35	1.50
25	.98	1.09	1.57	2.88	3.08	3.27	1.92	2.47	2.88	1.13	1.20	1.48
26	1.08	1.08	1.96	2.64	3.32	2.90	1.82	2.32	2.61	1.18	1.11	1.43
27	1.04	1.08	1.98	2.48	6.22	2.65	1.76	2.22	2.18	1.16	1.04	1.38
28	1.06	1.08	2.79	3.62	6.48	2.52	1.96	2.05	1.92	4.78	1.68	1.33
29	1.10	1.00	4.01	4.00	-------	2.30	3.42	1.94	2.20	4.58	2.87	1.28
30	1.04	.97	3.30	3.35	-------	2.22	3.02	1.83	2.27	3.28	2.01	1.19
31	.94	-------	2.96	3.00	-------	2.15	-------	1.73	-------	5.21	1.65	-------

Note.—Stage-discharge relation Dec. 17-22, 24-26, Jan. 10-12, 19 and Feb. 10 to Mar. 2 affected by ice.

Daily discharge, in second-feet, of Crooked Creek at Hileman's Farm, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.3	8.8	14	1,170	675	650	100	510	64	58	1,250	49
2	3.6	7.0	15	1,340	1,340	460	144	366	55	45	710	38
3	3.6	6.2	15	890	1,340	420	132	255	46	38	540	34
4	4.0	8.2	11	540	1,170	710	144	197	51	33	420	33
5	4.3	6.5	15	390	745	815	213	171	49	35	260	55
6	3.6	8.2	79	292	570	675	348	141	40	141	197	420
7	4.0	11	87	245	450	510	280	115	91	570	157	205
8	4.7	14	85	225	450	450	217	108	480	193	112	135
9	5.1	21	141	250	250	420	189	201	225	100	73	354
10	11	20	120	180	220	890	129	292	120	72	49	168
11	13	18	75	180	220	2,190	132	450	79	275	52	108
12	23	15	59	170	280	1,990	108	3,690	65	213	44	79
13	7.9	10	59	205	320	1,890	89	7,560	59	112	37	55
14	17	13	59	930	400	1,250	182	2,510	56	75	49	45
15	12	20	54	4,090	400	780	480	1,250	54	56	35	40
16	7.6	16	52	1,790	360	640	780	1,050	56	126	33	43
17	8.2	23	46	930	300	540	780	1,010	44	144	49	35
18	11	29	40	710	220	420	570	640	36	67	20	29
19	7.6	32	36	750	220	297	450	510	29	42	20	27
20	5.5	29	36	930	180	336	348	540	26	30	20	26
21	7.6	23	30	1,890	180	297	260	1,090	22	52	20	52
22	6.5	23	26	2,840	180	250	217	930	20	22	20	62
23	6.0	21	27	1,340	180	450	189	640	20	18	31	46
24	6.5	16	26	815	220	1,170	164	480	18	15	31	46
25	10	15	30	640	260	890	126	372	640	16	20	44
26	14	14	60	480	400	640	100	286	450	19	16	38
27	13	14	144	378	650	480	87	235	217	18	13	33
28	13	14	570	1,170	800	390	133	168	126	2,290	72	29
29	15	11	1,520	1,520	-------	275	1,010	132	225	2,090	605	26
30	13	9.9	930	970	-------	235	710	102	260	930	154	20
31	8.8	-------	675	710	-------	205	-------	81	-------	2,730	67	-------

Note.—Discharge Dec. 17-22, 24-26, Jan. 10-12, 19 and Feb. 10 to Mar. 2 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Red Bank Creek at Saint Charles, Mahoning Creek near Dayton and Blacklick Creek at Blacklick.

Monthly discharge of Crooked Creek at Hileman's Farm, for the year ending September 30, 1923.
(Drainage area, 279 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	23	3.6	8.85	0.032	0.04
November	32	6.2	15.9	.057	.06
December	1,520	11	166	.595	.69
January	4,090	170	934	3.35	3.86
February	1,340	180	464	1.66	1.73
March	2,190	205	697	2.50	2.88
April	1,010	87	294	1.05	1.17
May	7,560	81	841	3.01	3.47
June	640	18	124	.444	.50
July	2,730	15	343	1.23	1.42
August	1,250	13	167	.599	.69
September	420	20	79.1	.284	.32
The Year	7,560	3.6	346	1.24	16.83

OHIO BASIN—STATION NO. 16

STONY CREEK AT JOHNSTOWN

Location.—At single-span steel highway bridge, Poplar Street, Johnstown, Cambria County, about one and one-half miles above the confluence of Stony Creek and the Little Conemaugh River.

Drainage Area.—468 square miles.

Records Available.—July 2, 1913, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by Edmund F. Miller. Elevation of gage zero 1,154.0 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Banks are high and not subject to overflow. Control for low water is at a riffle, where the bed is composed of gravel and small boulders, about 100 feet below gage; practically permanent. Control for high stages is at a riffle, where the bed is composed of gravel and large boulders, about 1,300 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 7.1 feet at 10 a. m. February 2 (discharge, 4,850 second-feet); minimum, 0.86 foot at 6 p. m. October 1 (discharge, 23 second-feet).

.—Stage-discharge relation usually affected by ice for short periods.

Diversions.—A dam one mile above the mouth of Quemahoning Creek creates a reservoir having a capacity of 1,740,000,000 cubic feet, from which water is carried through a conduit to the Cambria plant of the Bethlehem Steel Company at Johnstown, and returned to the stream below the gaging station.

Accuracy.—Stage-discharge relation probably permanent. Rating curve fairly well defined below 1,000 second-feet and well defined from 1,000 to 8,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Cooperation.—A record of the quantity of water diverted from the Quemahoning Reservoir is furnished by the Bethlehem Steel Company, Johnstown.

The following discharge measurement was made by C. B. McElrath: No. 47, August 8: Gage height, 2.75 feet; discharge, 637 second-feet.

Daily Mean Gage Height, in feet, of Stony Creek, at Johnstown, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.89	0.90	0.95	3.96	3.49	2.85	2.13	-------	1.71	1.84	2.45	1.35
2	.88	.90	1.00	4.11	6.41	2.66	2.23	2.56	1.64	1.55	2.70	1.26
3	.88	.93	.98	3.02	6.57	3.97	2.17	2.41	1.62	1.50	3.26	1.25
4	.90	.92	1.07	2.34	5.10	5.12	3.26	2.26	1.58	1.47	2.88	1.25
5	.89	.91	2.24	2.15	3.97	4.83	3.69	2.09	1.52	1.55	2.69	1.69
6	.88	.94	1.84	1.99	3.05	4.18	4.68	2.22	1.63	1.95	3.44	2.05
7	.90	1.12	1.46	1.82	2.91	4.19	3.88	2.10	2.23	2.29	3.86	1.91
8	.98	.99	1.48	1.76	2.78	3.53	3.33	2.11	1.97	1.98	2.66	3.15
9	.97	.97	1.71	1.74	2.68	2.98	2.98	2.30	1.77	1.54	2.46	2.39
10	1.04	.95	1.69	1.74	2.43	3.43	2.61	2.75	1.65	1.76	2.08	1.94
11	1.09	.94	1.40	1.91	2.62	4.12	2.31	2.76	1.58	3.10	2.06	1.75
12	.97	.93	1.40	1.89	2.14	5.58	2.27	4.25	1.62	2.54	2.04	1.61
13	.94	.92	1.34	1.90	4.81	6.34	3.22	4.40	1.55	2.10	2.40	1.51
14	.94	.92	1.34	1.86	5.13	5.06	5.38	3.61	1.67	1.92	1.99	1.41
15	.91	.91	1.27	2.66	3.22	4.03	4.45	3.25	1.64	1.85	1.79	1.37
16	.92	.96	1.35	2.33	2.77	3.92	4.30	3.25	1.73	1.67	1.69	1.37
17	.99	.94	1.69	2.24	2.67	3.95	5.13	3.18	1.52	1.65	1.69	1.25
18	.96	.96	1.80	2.30	2.45	3.44	5.00	2.77	1.39	1.51	1.94	1.26
19	.92	.98	1.96	3.00	2.51	3.36	4.83	2.60	1.35	1.37	1.72	1.39
20	.91	.97	1.72	3.82	2.77	3.37	5.00	2.53	1.22	1.28	1.60	1.40
21	.90	.96	1.42	4.98	2.52	2.88	4.15	3.32	1.16	1.27	1.48	1.41
22	.89	.95	1.34	5.02	2.27	3.34	3.85	2.97	1.13	1.18	2.61	1.39
23	.94	.94	-------	3.79	2.03	4.22	3.52	2.67	1.68	1.17	2.25	1.34
24	.98	.95	1.18	3.11	1.89	4.81	3.19	2.36	2.29	1.49	1.78	1.29
25	.95	.97	1.33	2.84	2.02	4.22	2.87	2.30	2.14	1.47	1.64	1.35
26	.94	1.02	1.47	2.47	2.02	3.35	2.71	2.24	2.11	1.34	1.62	1.21
27	.94	.97	1.73	2.55	2.68	3.36	2.58	2.14	1.69	1.30	1.58	1.17
28	.92	.95	3.27	3.37	3.33	2.92	2.67	2.04	1.70	2.50	1.58	1.17
29	.91	.94	3.20	3.31	-------	2.70	3.94	1.95	2.81	2.52	1.56	1.11
30	.91	.97	2.23	2.85	-------	2.56	3.19	1.88	2.13	1.84	1.41	1.11
31	.90	-------	2.08	2.81	-------	2.28	-------	1.79	-------	2.51	1.38	-------

Note.—Stage-discharge relation Dec. 17-23, Jan. 10-13, Feb. 11 and Feb. 19-25 affected by ice. Gage heights Dec. 23 not observed and May 1 unsatisfactory.

Daily discharge, in second-feet, of Stony Creek at Johnstown, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	27	34	1,600	1,210	750	438	850	252	310	572	132
2	25	27	42	1,680	3,950	695	482	645	234	200	695	105
3	25	32	39	870	4,200	1,600	438	550	217	182	1,070	102
4	27	30	56	528	2,560	2,560	1,070	482	217	172	810	102
5	26	28	482	438	1,600	2,280	1,360	415	182	200	695	252
6	25	33	310	370	870	1,760	2,190	460	234	350	1,140	392
7	27	67	168	290	810	1,760	1,520	415	482	505	1,520	330
8	39	40	175	271	750	1,210	1,070	415	350	370	695	1,000
9	38	38	252	271	695	870	870	505	271	200	572	550
10	50	34	252	240	572	1,140	645	750	234	271	415	350
11	60	33	147	200	420	1,680	505	750	217	935	392	271
12	38	32	147	200	438	3,060	482	1,760	217	595	392	217
13	33	30	129	240	2,280	3,830	1,000	1,920	200	415	550	182
14	33	30	129	310	2,560	2,560	2,860	1,280	234	330	370	150
15	28	28	108	695	1,000	1,600	1,920	1,000	234	310	290	138
16	30	36	132	528	750	1,520	1,840	1,000	271	234	252	138
17	40	33	100	482	695	1,600	2,560	1,000	182	234	252	102
18	36	36	85	505	572	1,140	2,460	750	144	182	350	105
19	30	39	75	870	460	1,140	2,280	645	132	138	252	144
20	28	38	75	1,440	360	1,140	2,460	595	93	111	217	147
21	27	36	60	2,460	300	810	1,760	1,070	77	108	175	150
22	26	34	60	2,460	260	1,070	1,440	870	70	82	645	144
23	33	33	60	1,440	240	1,760	1,210	695	252	80	482	129
24	39	34	82	935	260	2,280	1,000	528	505	178	290	114
25	34	38	126	750	280	1,760	810	505	438	172	234	132
26	33	46	172	572	370	1,140	695	482	415	129	217	90
27	33	38	271	645	695	1,140	645	438	252	117	217	80
28	30	34	1,070	1,140	1,070	810	695	392	252	595	217	80
29	28	33	1,000	1,070	-------	695	1,520	350	750	595	200	64
30	28	38	482	750	-------	645	1,000	330	438	310	150	64
31	27	-------	415	750	-------	505	-------	290	-------	595	141	-------

Note.—Discharge does not include the water diverted from the Quemahoning Reservoir. Discharge Dec. 17-23, Jan. 10-13, Feb. 11 and Feb. 19-25 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Blacklick Creek at Blacklick and Laurel Hill Creek at Ursina. Discharge May 1 estimated because of unsatisfactory gage height record.

Monthly discharge of Stony Creek at Johnstown, for the year ending September 30, 1923.
(Drainage area, 468 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	60	25	32.3	0.074	0.09
November	67	27	35.2	.080	.09
December	1,070	34	217	.468	.54
January	2,460	200	806	1.73	1.99
February	4,200	240	1,080	2.31	2.40
March	3,830	505	1,509	3.21	3.70
April	2,860	438	1,310	2.80	3.12
May	1,920	290	714	1.54	1.78
June	750	70	268	.581	.65
July	935	80	297	.641	.74
August	1,520	141	467	1.01	1.16
September	1,000	64	199	.434	.48
The Year	4,200	25	574	1.24	16.74

Note.—Discharge does not include the water diverted from the Quemahoning Reservoir. Run-off includes the quanity of water diverted.

OHIO BASIN—STATION NO. 17

BLACKLICK CREEK AT BLACKLICK

Location.—At three-span steel highway bridge on road to Gratton, about one-quarter of a mile north of the Pennsylvania Railroad Station, Blacklick, Indiana County.

Drainage Area.—386 square miles.

Records Available.—August 16, 1904, to December 31, 1905, and January 8, 1907, to September 30, 1923.

Gage.—Standard chain attached to upstream side of bridge; read by Miss Carrie Kelly.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Right bank is high and not subject to overflow; left begins to overflow at a stage of about 12.0 feet. Bed is composed of sand, gravel and boulders. Control is at a riffle about 200 feet below gage; may shift occasionally.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 9.5 feet at noon May 13 (discharge, about 11,000 second-feet); minimum, 2.04 feet from 6 p. m. October 2 to 6 p. m. October 3 and from 6 p. m. October 4 to 6 p. m. October 5 (discharge, 21 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined below 10,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

The following discharge measurement was made by C. B. McElrath: No. 43, August 7: Gage height, 3.20 feet; discharge, 505 second-feet.

Daily Mean Gage Height, in feet, of Blacklick Creek, at Blacklick, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.06	2.17	2.21	5.42	4.60	3.70	3.05	4.15	2.67	2.35	3.35	2.29
2	2.05	2.16	2.24	4.76	5.55	3.35	2.95	3.95	2.62	2.20	2.97	2.27
3	2.04	2.17	2.27	4.15	5.15	3.85	3.08	3.70	2.57	2.37	2.95	2.25
4	2.05	2.16	2.37	3.80	4.40	4.95	3.15	3.20	2.45	2.49	2.82	2.17
5	2.04	2.17	2.45	3.55	4.15	4.75	3.45	3.17	2.46	2.38	2.95	2.91
6	2.06	2.25	2.52	3.45	3.65	4.70	3.65	2.95	2.46	2.25	3.47	2.75
7	2.06	2.45	2.90	3.40	3.65	4.55	3.35	2.85	3.05	2.20	3.62	2.85
8	2.13	2.39	2.73	3.21	3.60	4.25	3.19	-------	3.01	2.25	2.93	4.51
9	2.17	2.28	2.56	3.45	3.35	3.60	3.03	-------	2.95	2.29	2.77	3.59
10	2.23	2.23	2.50	3.65	3.18	3.65	3.01	-------	2.75	2.32	2.56	3.05
11	2.47	2.12	2.47	3.45	3.08	3.95	2.96	-------	2.57	2.39	2.53	2.77
12	2.39	2.13	2.47	3.45	2.97	4.15	3.08	-------	2.53	2.43	2.52	2.78
13	2.19	2.22	2.47	3.40	3.15	4.45	3.18	8.19	2.47	2.51	2.55	2.53
14	2.16	2.29	2.48	4.05	3.50	4.35	4.25	5.52	2.47	2.57	2.35	2.47
15	2.15	2.49	2.53	5.13	3.55	4.15	4.65	4.75	2.46	2.59	2.37	2.46
16	2.17	2.45	2.51	4.21	3.65	4.15	4.45	4.15	2.47	2.63	2.20	2.29
17	2.18	2.40	2.54	3.75	3.45	4.25	4.15	4.15	2.39	2.44	2.29	2.29
18	2.20	2.41	2.58	3.45	3.13	4.25	4.15	3.85	2.36	2.30	2.27	2.28
19	2.14	2.41	2.59	4.15	3.08	4.10	3.85	3.75	2.30	2.19	2.26	2.55
20	2.15	2.35	2.53	4.55	2.94	4.25	3.55	3.79	2.45	2.16	2.33	2.51
21	2.13	2.21	2.54	4.35	2.90	4.45	3.60	5.05	2.29	2.14	2.32	2.54
22	2.12	2.23	2.55	4.15	2.93	4.65	3.35	4.46	2.29	2.14	2.29	2.49
23	2.14	2.24	2.58	3.85	2.91	4.70	3.25	3.95	2.46	2.13	2.34	2.40
24	2.31	2.18	2.61	3.60	2.95	4.55	3.19	3.85	3.11	2.28	2.29	2.45
25	2.34	2.11	2.63	3.35	2.81	4.30	3.13	3.55	3.67	2.23	2.26	2.31
26	2.29	2.11	2.73	3.31	2.93	4.15	3.09	3.25	2.86	2.20	2.28	2.35
27	2.26	2.12	2.85	4.24	3.15	3.85	3.01	3.14	2.65	2.65	2.31	2.30
28	2.29	2.21	4.83	4.75	4.15	3.45	3.29	3.05	2.57	3.88	2.37	2.25
29	2.25	2.19	4.32	4.70	-------	3.25	4.39	2.95	2.53	3.60	2.83	2.24
30	2.23	2.19	3.73	4.20	-------	3.14	4.35	2.79	2.50	3.17	2.67	2.22
31	2.19	-------	3.83	3.75	-------	3.11	-------	2.71	-------	3.70	2.35	-------

Note.—Stage-discharge relation Dec. 11-26 and Jan. 5-12 affected by ice. Gage heights May 8-12 unsatisfactory.

Daily discharge, in second-feet, of Blacklick Creek at Blacklick, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	23	38	44	2,520	1,520	760	365	1,160	188	77	530	61
2	22	36	50	1,730	2,840	530	315	950	168	42	325	57
3	21	38	57	1,160	2,230	872	390	760	150	82	315	52
4	22	36	82	835	1,330	1,960	418	445	108	122	254	57
5	21	38	108	550	1,160	1,730	592	418	111	85	315	295
6	23	52	132	440	725	1,620	725	315	111	52	592	222
7	23	108	290	340	725	1,520	530	268	365	42	690	268
8	32	87	214	320	690	1,160	445	260	340	52	305	1,420
9	38	59	146	300	530	690	365	500	315	61	232	690
10	48	48	125	320	445	725	340	420	222	68	146	365
11	114	30	75	340	390	950	320	750	150	87	136	232
12	87	32	65	400	325	1,160	390	2,400	136	100	132	236
13	40	46	50	560	418	1,330	445	8,000	114	128	142	136
14	36	61	42	1,030	625	1,330	1,160	2,680	114	150	77	114
15	34	122	42	2,090	658	1,160	1,520	1,730	111	156	82	111
16	38	108	34	1,160	725	1,160	1,330	1,160	114	172	42	61
17	39	90	34	798	592	1,160	1,160	1,160	87	104	61	61
18	42	94	34	592	418	1,160	1,160	872	79	63	57	59
19	33	94	34	1,160	390	1,070	872	798	63	40	55	142
20	34	77	34	1,520	310	1,160	658	835	109	36	71	128
21	32	44	24	1,330	290	1,330	690	1,960	61	33	68	139
22	30	48	34	1,160	305	1,520	530	1,420	61	33	61	122
23	33	50	34	872	295	1,620	472	950	111	32	74	90
24	66	39	42	690	315	1,520	445	872	390	59	61	108
25	74	28	75	530	250	1,240	418	658	725	48	55	66
26	61	28	140	500	305	1,160	390	472	272	42	59	77
27	55	30	268	1,160	418	872	340	418	180	180	66	63
28	61	44	1,730	1,730	1,160	592	500	365	150	910	82	52
29	52	40	1,240	1,620	-------	472	1,330	315	136	690	258	50
30	48	40	798	1,160	-------	418	1,330	240	125	418	188	46
31	40	-------	872	798	-------	390	-------	204	-------	760	77	-------

Note.—Discharge Dec. 11-26 and Jan. 5-12 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Stony Creek at Johnstown, Loyalhanna Creek at New Alexandria, Crooked Creek at Hileman's Farm and West Branch Susquehanna River at Bower. Discharge May 8-12 estimated, because of unsatisfactory gage height record, from discharge of Stony Creek at Johnstown, Loyalhanna Creek at New Alexandria, Crooked Creek at Hileman's Farm and West Branch Susquehanna River at Bower.

Monthly discharge of Blacklick Creek at Blacklick, for the year ending September 30, 1923.
(Drainage area, 386 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	114	21	42.6	0.110	0.13
November	122	28	56.2	.146	.16
December	1,730	34	224	.580	.67
January	2,520	300	959	2.48	2.86
February	2,840	250	728	1.89	1.97
March	1,960	390	1,110	2.88	3.32
April	1,520	315	665	1.72	1.92
May	8,000	204	1,080	2.80	3.23
June	725	61	179	.464	.52
July	910	32	159	.412	.48
August	690	42	181	.469	.54
September	1,420	46	186	.482	.54
The Year	8,000	21	464	1.20	16.34

OHIO BASIN—STATION NO. 18

LOYALHANNA CREEK AT NEW ALEXANDRIA

Location.—At single-span wooden covered highway bridge, New Alexandria, Westmoreland County.

Drainage Area.—264 square miles.

Records Available.—August 17, 1913, to August 31, 1918, and August 7, 1919, to July 16, 1923, when the station was discontinued.

Gage.—Standard chain attached to upstream side of bridge; read by E. E. Huffman. Elevation of gage zero 917.26 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Both banks are high and do not overflow. Bed is composed of gravel and boulders. Control for low stages is at a gravel riffle about 50 feet below gage; practically permanent. Medium and high stage control is at a riffle, about 1,300 feet below gage, composed of gravel and boulders; probably permanent.

Extremes of Discharge.—Maximum stage during the period October 1 to July 16, estimated from hydrograph, 6.6 feet at 5 a. m. May 13 (discharge, 3,250 second feet); minimum, 1.46 feet October 1 to 6 (discharge, 42 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined below 4,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

The following discharge measurement was made by C. B. McElrath: No. 21, June 2: Gage height, 1.91 feet: discharge, 146 second-feet.

Daily Mean Gage Height, in feet, of Loyalhanna Creek at New Alexandria, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.46	1.58	1.54	4.71	3.24	2.87	2.09	2.85	1.92	1.83	------	------
2	1.46	1.58	1.60	3.96	5.51	2.61	2.25	2.71	1.91	1.79	------	------
3	1.46	1.58	1.60	3.45	5.15	2.95	2.23	2.50	1.86	1.75	------	------
4	1.46	1.58	1.67	3.00	4.37	3.25	2.43	2.35	1.80	1.71	------	------
5	1.46	1.58	2.74	2.82	3.36	3.17	2.69	2.27	1.77	1.68	------	------
6	1.46	1.62	2.28	2.54	2.90	2.87	3.03	2.23	1.77	1.90	------	------
7	1.48	1.80	2.20	2.52	2.86	2.85	2.91	2.19	2.20	2.21	------	------
8	1.48	1.74	2.36	2.66	2.70	2.75	2.67	2.47	2.14	2.11	------	------
9	1.56	1.66	2.48	2.85	2.57	2.73	2.61	2.57	1.97	1.97	------	------
10	1.66	1.62	2.22	2.82	2.43	4.94	2.42	2.59	1.87	1.93	------	------
11	1.71	1.60	2.15	2.70	2.29	4.67	2.39	2.84	1.87	------	------	------
12	1.70	1.58	1.95	2.60	2.16	4.41	2.33	5.56	1.84	------	------	------
13	1.65	1.56	1.86	2.44	4.66	3.44	2.31	5.90	1.81	------	------	------
14	1.59	1.54	1.93	3.61	4.44	3.15	5.66	4.30	1.78	2.44	------	------
15	1.55	1.60	1.90	4.82	3.21	3.13	4.83	3.59	1.79	2.31	------	------
16	1.50	1.60	2.00	3.47	2.83	3.17	4.37	3.49	2.25	2.17	------	------
17	1.52	1.60	2.35	2.59	2.63	2.99	4.27	3.11	1.99	------	------	------
18	1.60	1.62	2.78	2.23	2.47	2.78	3.75	2.83	1.94	------	------	------
19	1.58	1.62	2.57	1.97	2.43	2.69	3.39	2.70	1.89	------	------	------
20	1.58	1.60	2.25	1.99	2.32	2.45	3.35	3.11	1.81	------	------	------
21	1.58	1.57	2.15	3.38	2.25	2.37	3.20	3.33	1.70	------	------	------
22	1.58	1.56	2.04	4.56	2.19	3.11	2.93	2.95	2.14	------	------	------
23	1.60	1.56	1.99	3.53	2.11	4.54	2.68	2.75	3.38	------	------	------
24	1.68	1.56	1.94	3.19	1.95	4.53	2.53	2.63	3.45	------	------	------
25	1.64	1.56	1.96	2.91	2.09	3.65	2.39	2.51	------	------	------	------
26	1.62	1.55	2.01	2.53	2.21	3.41	2.26	2.39	------	------	------	------
27	1.60	1.56	1.94	2.70	2.96	3.13	2.21	2.31	------	------	------	------
28	1.60	1.85	2.85	4.76	3.07	2.75	2.38	2.22	------	------	------	------
29	1.58	1.69	3.38	4.16	------	2.66	3.94	2.15	2.15	------	------	------
30	1.58	1.60	2.70	3.47	------	2.61	3.07	2.09	1.97	------	------	------
31	1.58	------	2.83	3.20	------	2.34	------	1.97	------	------	------	------

Note.—Stage-discharge relation Dec. 14-27 and Jan. 6-12 affected by ice. Gage heights June 25-28 and July 11-13 unsatisfactory. Station discontinued July 16- 1923.

Daily discharge, in second-feet, of Loyalhanna Creek at New Alexandria, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	42	62	55	1,640	685	500	187	500	136	112	------	------
2	42	62	65	1,150	2,260	385	242	430	133	103	------	------
3	42	62	65	795	2,020	550	236	340	120	94	------	------
4	42	62	78	575	1,430	685	312	280	105	85	------	------
5	42	62	452	475	795	685	430	250	98	79	------	------
6	42	69	253	340	525	500	575	236	98	130	------	------
7	45	105	225	260	500	500	525	222	225	228	------	------
8	45	92	284	220	430	452	408	328	204	194	------	------
9	58	76	332	200	362	452	385	362	151	151	------	------
10	76	69	232	190	312	1,780	308	385	122	139	------	------
11	85	65	208	190	256	1,640	296	500	122	2,000	------	------
12	83	62	145	220	211	1,430	272	2,340	115	1,100	------	------
13	74	58	120	316	1,640	795	264	2,610	108	550	------	------
14	63	55	85	910	1,430	685	2,430	1,360	101	316	------	------
15	56	65	75	1,710	685	630	1,710	910	103	264	------	------
16	48	65	65	850	500	685	1,430	850	242	214	------	------
17	51	65	65	385	408	575	1,360	630	157	------	------	------
18	65	69	55	236	328	475	1,030	500	142	------	------	------
19	62	69	55	151	312	430	795	430	128	------	------	------
20	62	65	55	157	268	320	795	630	108	------	------	------
21	62	60	55	795	242	288	685	740	83	------	------	------
22	62	58	60	1,570	222	630	550	550	204	------	------	------
23	65	58	65	850	194	1,500	430	452	796	------	------	------
24	79	58	65	685	145	1,500	362	408	795	------	------	------
25	72	58	65	525	187	910	296	340	1,500	------	------	------
26	69	56	85	362	228	795	246	296	1,000	------	------	------
27	65	58	120	430	550	630	228	264	950	------	------	------
28	65	118	500	1,710	630	452	292	232	600	------	------	------
29	62	81	795	1,290	------	408	1,090	208	208	------	------	------
30	62	65	430	850	------	385	630	187	151	------	------	------
31	62	------	500	685	------	276	------	151	------	------	------	------

Note.—Discharge Dec. 14-27 and Jan. 6-12 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Blacklick Creek at Blacklick and Laurel Hill Creek at Ursina. Discharge June 25-28 estimated, because of unsatisfactory gage height record, from discharge of Stony Creek at Johnstown, Blacklick Creek at Blacklick and Kiskiminitas River at Avonmore. Discharge July 11-13 estimated, because of unsatisfactory gage height record, from discharge at Johnstown and Avonmore. Station was discontinued July 16, 1923.

Monthly discharge of Loyalhanna Creek at New Alexandria, for the year ending September 30, 1923.
(Drainage area 264 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	85	42	59.7	0.226	0.26
November	118	55	67.6	.256	.29
December	795	55	184	.697	.80
January	1,710	151	668	2.53	2.92
February	2,260	145	634	2.40	2.50
March	1,780	276	707	2.68	3.09
April	2,430	187	627	2.38	2.66
May	2,610	151	578	2.19	2.52
June	1,500	83	300	1.14	1.27
July 1-16	2,000	79	360	1.36	.81
August	------	------	------	------	------
September	------	------	------	------	------
The Year	------	------	------	------	------

Note.—Station was discontinued July 16, 1923.

OHIO BASIN—STATION NO. 19

KISKIMINITAS RIVER AT AVONMORE

Location.—At four-span steel highway bridge, Avonmore, Westmoreland County.

Drainage Area.—1,720 square miles.

Records Available.—May 29, 1907, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by J. H. Shupe. Elevation of gage zero 805.64 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Right bank is high and not subject to overflow; left is low and overflows at high stages. Bed is composed of gravel. Control is at the first of a series of riffles about 500 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 18.0 feet at 4 a. m. May 13 (discharge, 29,800 second-feet); minimum, 2.24 feet at 4.45 p. m. October 28 (discharge, 221 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined below 30,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

The following discharge measurement was made by C. B. McElrath: No. 41, August 7: Gage height, 7.88 feet; discharge, 5,870 second-feet.

Daily Mean Gage Height, in feet, of Kiskiminitas River at Avonmore, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.34	2.37	2.52	6.83	6.49	11.75	4.78	6.65	3.82	3.70	6.28	3.12
2	2.34	2.36	2.50	8.65	9.52	10.64	4.78	6.00	3.70	3.40	5.10	3.06
3	2.31	2.39	2.56	6.76	11.59	7.57	4.70	5.52	3.62	3.25	5.05	2.98
4	2.40	2.40	2.57	6.00	10.51	9.65	4.70	5.20	3.48	3.22	5.25	3.05
5	2.34	2.41	3.23	5.25	8.18	9.45	5.10	4.95	3.45	3.32	4.85	3.65
6	2.34	2.49	4.90	4.80	7.00	8.04	6.78	4.75	3.44	3.50	5.86	5.57
7	2.39	2.80	3.89	4.58	6.15	7.52	7.11	4.62	4.96	4.40	7.82	4.67
8	2.41	2.82	3.50	4.55	5.92	6.78	6.19	4.50	5.45	3.95	6.00	4.44
9	2.45	2.72	3.60	4.93	5.72	6.25	5.80	4.98	4.75	3.52	5.10	6.00
10	2.61	2.60	3.60	5.95	5.28	7.08	5.38	5.70	4.03	3.62	4.52	4.90
11	2.72	2.51	3.29	4.95	4.90	9.80	5.05	5.62	3.72	6.45	4.12	4.15
12	2.82	2.49	3.10	4.78	4.60	9.40	4.75	11.47	3.70	5.55	3.95	3.85
13	2.62	2.45	3.04	4.42	7.94	11.61	4.64	15.89	3.62	4.60	4.80	3.62
14	2.49	2.39	3.09	4.68	11.22	9.70	8.10	11.05	3.50	4.00	4.40	3.45
15	2.42	2.66	3.25	8.18	8.66	8.05	9.49	8.48	3.45	3.68	3.82	3.28
16	2.38	2.99	3.62	8.02	7.29	7.32	8.92	7.88	3.58	4.08	3.58	3.15
17	2.39	2.94	4.03	6.35	10.93	7.62	9.15	8.02	3.48	3.85	3.45	3.10
18	2.48	2.78	4.71	5.50	11.35	6.85	8.85	6.85	3.28	3.48	3.38	3.08
19	2.45	2.66	4.12	6.42	11.00	6.40	8.25	6.18	3.19	3.27	3.40	3.17
20	2.42	2.62	5.21	6.50	11.00	5.90	7.68	5.88	3.15	3.14	3.40	3.35
21	2.42	2.57	4.86	8.02	10.62	5.75	7.58	7.70	3.17	3.03	3.38	3.45
22	2.38	2.59	5.18	12.08	10.55	5.80	6.90	7.38	3.10	2.96	3.62	3.40
23	2.44	2.52	5.22	9.25	10.15	8.15	6.40	6.48	3.82	2.80	4.72	3.21
24	2.51	2.51	5.02	7.58	9.55	9.82	6.05	5.95	3.55	2.91	3.69	3.75
25	2.60	2.50	4.88	6.75	9.55	8.68	5.52	5.50	5.33	3.48	3.48	3.40
26	2.62	2.52	4.72	6.00	9.85	7.60	5.12	5.15	5.05	3.29	3.32	3.25
27	2.52	2.43	4.50	5.74	10.91	6.98	4.86	4.90	4.87	3.23	3.21	3.12
28	2.35	2.46	4.85	8.63	12.20	6.18	5.26	4.60	4.12	4.58	3.36	3.09
29	2.42	2.51	8.12	9.77	-------	5.65	8.84	4.40	5.88	7.28	3.70	3.02
30	2.40	2.52	5.75	7.85	-------	5.55	7.64	4.18	4.32	5.50	3.45	2.97
31	2.33	-------	4.97	6.62	-------	5.42	-------	4.02	-------	6.92	3.22	-------

Note.—Stage-discharge relation Dec. 13-27 and Feb. 17 to Mar. 3 affected by ice.

Daily discharge, in second-feet, of Kiskiminitas River at Avonmore, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	261	273	330	4,360	3,990	3,400	2,050	4,120	1,160	1,090	3,740	665
2	261	269	330	6,860	8,290	3,400	2,050	3,380	1,090	875	2,360	652
3	249	281	352	4,360	12,400	4,600	1,960	2,800	1,020	770	2,250	600
4	285	285	352	3,380	10,100	8,460	1,960	2,460	945	735	2,460	632
5	261	290	770	2,460	6,260	8,120	2,360	2,250	910	805	2,050	1,020
6	261	326	2,150	2,050	4,620	5,960	4,360	2,050	910	945	3,260	2,920
7	281	480	1,240	1,860	3,620	5,270	4,750	1,860	2,250	1,680	5,680	1,960
8	290	480	945	1,860	3,260	4,360	3,620	1,770	2,680	1,320	3,380	1,620
9	308	425	1,020	2,150	3,030	3,620	3,140	2,250	2,050	945	2,360	3,380
10	375	375	1,020	3,380	2,580	4,750	2,680	3,030	1,320	1,020	1,770	2,150
11	425	330	805	2,250	2,150	8,800	2,250	2,920	1,090	3,860	1,410	1,500
12	480	326	665	2,050	1,860	8,120	2,050	12,200	1,090	2,920	1,320	1,160
13	375	308	550	1,680	5,820	12,400	1,860	23,400	1,020	1,860	2,050	1,020
14	326	281	500	1,960	11,500	8,630	6,110	11,100	945	1,320	1,680	910
15	294	400	480	6,260	7,010	5,960	8,290	6,710	910	1,090	1,160	805
16	277	600	420	5,960	5,010	5,010	7,310	5,820	1,020	1,410	1,020	700
17	281	570	400	3,860	3,200	5,400	7,780	5,960	945	1,160	910	665
18	321	480	360	2,800	2,400	4,360	7,160	4,360	805	945	875	665
19	308	400	320	3,860	2,000	3,860	6,260	3,620	735	770	875	700
20	294	375	320	3,990	1,700	3,260	5,540	3,260	700	700	875	840
21	294	352	320	5,960	1,500	3,140	5,400	5,540	700	632	875	910
22	277	375	320	13,600	1,300	3,140	4,490	5,140	665	570	1,020	875
23	303	330	320	7,780	1,200	6,260	3,860	3,990	1,160	480	1,960	735
24	330	330	360	5,400	1,200	8,800	3,380	3,380	1,020	540	1,090	1,160
25	375	330	440	4,360	1,300	7,010	2,800	2,800	2,580	945	945	875
26	375	330	480	3,380	1,600	5,400	2,360	2,460	2,250	805	805	770
27	330	298	650	3,030	3,200	4,620	2,050	2,150	2,150	770	735	665
28	265	312	2,050	6,860	4,200	3,620	2,580	1,860	1,410	1,860	840	665
29	294	330	6,110	8,800	-------	2,920	7,160	1,680	1,240	5,010	1,090	600
30	285	330	3,140	5,680	-------	2,920	5,400	1,500	1,590	2,800	910	570
31	257	-------	2,250	4,120	-------	2,680	-------	1,320	-------	4,490	735	-------

Note.— Discharge Dec. 13-27 and Feb. 17 to Mar. 3 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Stony Creek at Johnstown, Blacklick Creek at Blacklick and Loyalhanna Creek at New Alexandria.

Monthly discharge of Kiskiminitas River at Avonmore, for the year ending September 30, 1923.
(Drainage area 1,720 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	480	249	310	0.180	0.21
November	600	269	362	.210	.23
December	6,110	320	959	.558	.64
January	13,600	1,680	4,400	2.56	2.95
February	12,400	1,200	4,150	2.41	2.51
March	12,400	2,680	5,430	3.16	3.64
April	8,290	1,860	4,100	2.38	2.66
May	23,400	1,320	4,420	2.57	2.96
June	2,680	665	1,280	.744	.83
July	5,010	480	1,460	.849	.98
August	5,680	735	1,690	.983	1.13
September	3,380	570	1,080	.628	.70
The Year	23,400	249	2,460	1.43	19.44

OHIO BASIN—STATION NO. 20

KISKIMINITAS RIVER AT VANDERGRIFT

Location.—At pumping station of the American Steel and Tin Plate Company, about 300 feet downstream from the Pennsylvania Railroad Station, Vandergrift, Westmoreland County.

Drainage Area.—1,830 square miles.

Records Available.—November 1, 1915, to September 30, 1923.

Gage.—A float type gage is installed at the pumping station. The float operates in a 3 inch pipe inserted in the pump house well, which is fed by gravity from the river. Gage heights are indicated on a vertical staff inside the pumping station; read to feet and inches twice daily by pump house engineer; during high stages more frequently. Elevation of gage zero 767.14 feet, United States Geological Survey datum.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of gravel and rock.

Extremes of Stage.—Maximum gage height during the year, estimated from hydrograph, 17.1 feet at 8 a. m. May 13; minimum, 2.17 feet at 6 a. m. October 17.

Ice.—Stage-discharge relation usually affected by ice.

Cooperation.—Record is furnished by the American Steel and Tin Plate Company, Vandergrift.

Daily Mean Gage Height, in feet, of Kiskiminitas River at Vandergrift, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.25	2.58	2.54	6.53	6.35	6.66	5.75	6.79	4.46	4.08	6.14	3.34
2	2.25	2.58	2.75	8.89	8.48	5.64	4.92	6.34	4.21	3.88	4.93	3.33
3	2.25	2.67	2.92	7.29	10.76	6.39	4.71	5.88	3.88	3.71	4.71	3.25
4	2.25	2.50	2.88	6.54	10.43	9.26	5.00	5.34	3.79	3.50	5.91	3.16
5	2.25	2.50	3.37	5.84	7.52	8.10	5.67	4.80	3.67	3.42	5.34	3.88
6	2.25	2.67	5.41	5.25	6.58	7.08	6.62	4.34	3.92	3.71	5.48	6.06
7	2.29	2.84	4.79	5.21	5.79	7.67	7.30	4.12	5.56	4.54	7.50	5.65
8	2.42	3.00	4.16	4.96	5.66	6.75	6.58	4.00	5.79	4.34	6.25	4.84
9	2.58	2.96	4.08	5.12	5.17	6.62	6.08	4.25	4.92	4.00	5.04	6.13
10	2.58	2.92	4.08	6.00	5.46	7.22	5.70	5.29	4.79	3.79	4.42	5.38
11	2.54	2.79	3.96	5.92	4.92	10.00	5.34	5.45	4.42	6.08	3.66	4.75
12	2.62	2.75	3.79	5.08	4.87	9.69	4.58	10.52	4.50	5.88	3.42	4.42
13	2.96	2.83	3.54	4.50	7.67	11.17	4.32	15.73	4.29	5.25	4.42	4.00
14	2.96	2.75	3.58	5.19	10.56	9.07	7.14	11.03	4.08	4.46	4.08	3.88
15	2.92	2.50	3.88	7.98	8.62	7.33	9.65	9.00	3.79	4.12	3.75	3.83
16	2.50	3.08	3.88	8.25	5.75	6.66	8.79	8.08	3.88	4.46	3.75	3.66
17	2.25	3.42	3.84	6.92	5.08	7.46	8.62	7.75	3.17	4.30	3.38	3.54
18	2.42	2.96	4.75	6.46	5.96	6.80	8.64	7.21	3.50	3.96	3.29	3.42
19	2.46	2.92	4.50	6.38	5.08	5.58	8.10	6.34	3.42	3.70	3.25	3.29
20	2.54	2.83	4.08	5.75	4.79	5.46	7.33	6.12	3.29	3.46	3.21	3.17
21	2.46	2.67	3.88	6.71	4.54	5.09	8.00	6.47	3.00	3.29	3.17	3.33
22	2.42	2.62	3.75	11.25	4.20	6.10	7.08	7.59	2.92	3.25	3.08	3.29
23	2.67	2.79	3.88	9.38	3.92	7.49	6.58	6.58	2.92	3.42	3.78	3.29
24	2.71	2.79	3.83	7.71	3.71	9.76	5.88	6.12	3.58	3.00	4.42	3.84
25	2.80	2.67	3.50	6.71	3.88	8.77	5.92	5.92	6.23	3.73	4.00	4.00
26	2.96	2.67	3.46	5.84	4.08	6.75	5.38	5.58	5.25	3.68	3.42	3.75
27	2.79	2.58	3.46	5.79	5.39	5.96	5.04	5.29	4.71	3.65	2.96	3.62
28	2.62	2.54	2.97	8.24	6.84	5.34	5.60	5.00	4.58	4.87	3.58	3.33
29	2.50	2.50	7.56	9.48	-------	5.08	7.74	4.66	4.34	7.77	3.66	3.25
30	2.67	2.42	6.50	7.66	-------	5.38	6.92	4.50	4.21	5.18	3.58	3.17
31	2.58	-------	5.70	6.79	-------	5.08	-------	4.54	-------	7.00	3.58	-------

Note.—Stage-discharge relation Dec. 14-26 and Feb. 18-23 affected by ice.

OHIO BASIN—STATION NO. 21

ALLEGHENY RIVER AT FREEPORT

Location.—At three-span steel highway bridge, Freeport, Armstrong County, about 500 feet upstream from mouth of Buffalo Creek.

Drainage Area.—11,400 square miles, including Buffalo Creek.

Records Available.—April 16, 1873, to September 30, 1923.

Gages.—Painted staff on first pier from right bank. Standard chain attached to downstream side of bridge on May 28, 1923, which superceded the staff gage on June 1, 1923. Both gages were read to tenths twice daily by Mrs. Anna R. Burtner; during high stages more frequently. Elevation of gage zeros 734.98 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of sand and gravel. Control is at a riffle about two miles downstream from the gage.

Extremes of Stage.—Maximum gage height during the year, estimated from hydrograph, 21.2 feet at noon May 13; minimum, 0.3 foot from 8 a. m. October 4 to 3 p. m. October 9.

Ice.—Stage-discharge relation usually affected by ice.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh.

Daily Mean Gage Height, in feet, of Allegheny River at Freeport, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.7	2.0	2.6	7.75	5.7	13.3	6.0	5.2	3.35	1.6	4.0	1.0
2	.7	2.0	2.8	10.85	6.45	12.6	5.5	4.85	3.05	1.5	3.1	.9
3	.5	2.0	3.65	10.3	8.5	11.65	5.5	4.7	2.9	1.5	2.85	.9
4	.3	2.0	5.0	9.6	11.4	12.9	5.45	4.65	2.9	1.5	2.6	.95
5	.3	2.0	4.2	8.2	10.75	17.15	6.3	4.45	2.85	1.5	2.4	1.0
6	.3	2.0	4.0	7.0	8.85	18.3	10.2	4.3	2.7	1.4	2.4	1.1
7	.3	2.1	3.5	6.15	7.5	15.8	11.8	4.2	2.85	2.1	2.6	1.35
8	.3	2.1	4.0	5.55	6.8	13.25	10.75	4.15	3.4	1.9	2.85	1.35
9	.3	2.1	4.0	5.1	6.55	10.8	9.65	4.25	3.05	1.7	2.7	1.55
10	.3	2.5	5.2	5.55	6.2	9.85	8.65	4.55	2.9	1.6	2.4	1.45
11	1.2	2.5	5.2	5.2	5.8	11.7	7.85	5.2	2.9	2.4	2.2	1.3
12	1.9	2.7	4.2	4.8	5.2	12.6	6.95	9.6	2.8	2.45	2.2	1.15
13	2.1	2.7	4.0	4.7	6.2	15.5	6.55	19.7	2.8	1.9	2.2	1.1
14	2.1	2.7	4.0	4.55	9.3	16.4	6.4	15.65	2.7	1.5	2.0	1.05
15	2.1	2.7	4.0	7.7	8.75	14.2	7.5	12.0	2.45	1.1	1.95	1.0
16	2.1	2.7	4.0	8.7	6.8	11.9	7.25	10.9	2.25	1.5	1.8	.9
17	2.1	2.9	3.1	8.0	6.6	11.9	7.2	12.65	2.2	1.4	1.7	.9
18	2.1	3.0	3.05	6.0	9.9	12.55	7.05	11.6	2.05	1.4	1.7	.8
19	1.9	3.2	3.5	6.65	9.65	11.5	6.55	9.9	2.0	1.3	1.6	.8
20	1.7	2.7	3.5	7.2	9.1	10.4	6.15	8.7	1.95	1.3	1.6	.85
21	1.5	2.5	3.2	9.65	8.8	9.5	5.95	8.75	1.75	1.25	1.6	1.15
22	1.5	2.1	3.1	15.35	9.25	8.65	5.55	9.75	1.6	1.1	1.55	1.35
23	1.5	2.1	3.5	13.6	8.8	9.10	5.15	8.9	1.6	1.0	1.35	1.2
24	1.5	2.0	3.6	11.3	8.5	11.45	5.0	8.05	1.6	1.0	1.2	2.05
25	1.7	2.0	3.6	9.95	8.2	11.9	4.9	7.4	2.45	.9	1.2	1.65
26	1.7	2.0	3.5	8.7	7.95	10.75	4.85	6.75	2.55	.9	1.1	1.45
27	1.7	2.0	3.45	7.5	9.4	9.65	4.7	6.2	2.3	1.0	1.1	1.3
28	2.0	2.0	4.1	7.65	11.8	8.6	4.7	5.8	1.95	2.85	1.25	1.1
29	2.0	2.4	9.45	8.5	-------	7.6	5.45	5.45	1.75	3.4	1.45	1.1
30	2.0	2.4	9.5	7.0	-------	6.85	5.7	5.2	1.6	2.95	1.35	1.1
31	2.0	-------	7.75	6.05	-------	6.5	-------	4.0	-------	3.9	1.15	-------

Note.—Stage-discharge relation Dec. 13-27, Jan. 10-13, 28-31 and Feb. 18-26 affected by ice.

OHIO BASIN—STATION NO. 22

SOUTH FORK TEN MILE CREEK AT POLLOCK'S MILL

Location.—At single-span steel highway bridge, about two miles downstream from Jefferson, at Pollock's Mill, Greene County.

Drainage Area.—190 square miles.

Records Available.—June 22, 1915, to September 30, 1923.

Gage.—Staff attached to downstream corner or right abutment; read to tenths twice daily by James M. Pollock.

Discharge Measurements.—Made from upstream side of bridge of by wading.

Channel and Control.—Right bank is high and not subject to overflow; left begins to overflow at a stage of about 7 feet. Bed is a formation of rock shingle and gravel. Control is at a riffle about 200 feet below gage; may shift occasionally.

Extremes of Stage.—Maximum gage height during the year, estimated from hydrograph, 7.3 feet at 11 a. m. July 16; minimum, 1.0 foot from October 1 to 7.

Ice.—Stage-discharge relation usually affected by ice.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh.

The following discharge measurement was made by C. B. McElrath: No. 15, August 10: Gage height, 1.64 feet; discharge, 48.6 second-feet.

Daily Mean Gage Height, in feet, of South Fork Ten Mile Creek at Pollock's Mill, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.0	1.2	1.3	1.8	2.5	2.1	1.8	1.95	1.5	1.7	2.05	1.4
2	1.0	1.2	1.3	1.8	2.4	2.2	1.7	1.85	1.6	1.7	2.0	1.4
3	1.0	1.2	1.2	1.75	2.5	2.1	1.7	1.75	1.5	1.7	2.0	1.4
4	1.0	1.2	1.2	1.7	2.3	2.1	1.8	1.7	1.4	1.7	3.1	1.4
5	1.0	1.2	1.25	1.7	2.0	2.0	1.8	1.6	1.3	2.0	2.85	1.4
6	1.0	1.2	1.3	1.7	2.0	1.95	2.3	1.6	1.3	2.0	2.4	3.1
7	1.0	1.2	1.3	1.7	2.0	3.7	2.0	1.6	1.35	1.55	2.1	2.5
8	1.1	1.2	1.4	2.4	1.9	2.95	1.9	1.6	1.4	1.3	2.0	2.7
9	1.2	1.2	2.2	2.7	1.8	2.3	1.8	1.8	1.4	1.3	1.9	2.35
10	1.2	1.2	1.65	2.15	1.8	3.6	1.7	1.95	1.4	1.3	1.75	2.05
11	1.2	1.2	1.4	2.1	1.7	3.7	1.7	3.75	1.4	1.3	1.6	1.85
12	1.6	1.2	1.4	2.0	1.8	3.1	1.7	3.3	1.4	1.3	1.65	1.8
13	1.4	1.2	1.4	1.9	3.95	3.0	2.85	3.0	1.4	2.25	1.95	1.7
14	1.4	1.2	1.4	1.8	2.55	2.35	5.45	2.35	1.4	2.1	1.9	1.65
15	1.3	1.3	1.4	2.65	2.4	2.15	4.3	2.1	1.4	2.0	1.5	1.5
16	1.2	1.3	1.3	2.55	2.4	2.1	3.2	2.9	1.4	5.2	1.5	1.45
17	1.2	1.3	1.45	2.3	2.4	2.2	2.65	2.75	1.4	3.55	1.5	1.4
18	1.2	1.3	1.95	1.95	2.4	2.0	2.4	2.2	1.3	2.75	1.5	1.4
19	1.2	1.4	1.9	1.75	2.2	1.9	2.1	2.0	1.3	2.0	1.8	1.4
20	1.2	1.4	1.75	1.85	2.2	1.9	2.0	1.9	1.25	1.85	1.7	1.5
21	1.2	1.4	1.6	2.5	2.2	2.4	1.9	1.9	1.2	1.7	1.6	1.5
22	1.1	1.4	1.5	3.3	2.2	3.5	1.8	1.8	1.2	1.5	2.35	1.4
23	1.1	1.4	1.4	2.45	2.05	3.0	1.8	1.7	1.1	1.5	2.95	1.4
24	1.4	1.4	1.4	2.3	1.7	2.6	1.75	1.6	1.15	1.45	2.6	1.4
25	1.4	1.4	1.4	2.2	1.6	2.5	1.7	1.6	2.8	1.4	2.0	1.4
26	1.4	1.4	1.4	2.2	2.0	2.3	1.6	1.6	1.85	1.4	1.85	1.4
27	1.3	1.4	1.3	2.25	2.2	2.2	1.6	1.5	1.9	1.4	1.65	1.4
28	1.3	1.4	1.35	3.55	2.2	2.0	1.65	1.5	1.9	3.2	1.5	1.4
29	1.3	1.35	2.25	3.05	-------	1.8	2.55	1.5	1.8	2.5	1.45	1.4
30	1.3	1.3	1.85	2.85	-------	1.9	2.15	1.5	1.8	2.2	1.4	1.4
31	1.2	-------	1.8	2.6	-------	1.8	-------	1.5	-------	2.1	1.5	-------

OHIO BASIN—STATION NO. 23

MONONGAHELA RIVER AT SOUTH BROWNSVILLE

Location.—At four-span steel highway bridge, known as Brownsville Bridge, South Brownsville, Fayette County, about one-quarter of a mile downstream from Lock No. 5.

Drainage Area.—5,130 square miles.

Records Available.—February 18, 1915, to September 30, 1923.

Gage.—Staff in two sections; lower is at Lock No. 5, attached to downstream side of middle wall, graduated from zero to 32.4 feet; upper is about 200 feet below the lower lock gate, on railroad embankment, graduated from 31.0 feet to 45.5 feet. Gage read to tenths twice daily by Charles W. Keibler; during high stages more frequently. Elevation of gage zero 726.23 feet, United States Geological survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Right bank is high and not subject to overflow; left is overflowed during extremely high stages. Control is lock and dam No. 4. Flashboards are used on the dam during low water which affect the stage-discharge relation.

Extremes of Stage.—Maximum gage height during the year, 29.4 feet observed at 4 p. m. February 2; minimum, 10.3 feet on October 15.

Ice.—Stage-discharge relation usually affected by ice.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh.

Daily Mean Gage Height, in feet, of Monongahela River at South Brownsville, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10.8	11.25	11.6	16.25	16.15	16.9	12.85	14.1	11.8	14.7	13.7	11.85
2	10.65	11.3	11.5	21.1	26.7	15.8	12.65	13.3	11.75	13.4	14.0	11.8
3	10.75	11.3	11.5	18.45	26.05	14.95	12.55	12.95	11.7	12.8	13.65	11.8
4	10.65	11.25	11.55	15.6	21.2	14.75	12.45	12.65	11.5	12.5	14.4	11.8
5	10.55	11.15	11.6	14.4	17.7	14.6	12.6	12.5	11.5	12.3	13.35	11.65
6	10.6	11.2	14.15	13.7	15.65	14.4	13.2	12.4	11.85	12.15	13.4	12.7
7	10.5	11.15	15.0	13.35	14.65	16.45	14.55	12.3	12.05	12.2	13.75	12.55
8	10.45	10.95	14.0	13.35	13.95	18.9	14.3	12.15	12.2	12.6	13.35	12.6
9	10.4	10.85	14.4	14.4	13.6	17.15	13.75	12.45	12.35	12.65	13.55	12.8
10	10.45	10.8	16.1	17.1	13.4	16.15	13.3	12.7	12.3	12.25	13.45	12.8
11	10.55	10.8	14.6	16.75	13.35	38.75	13.1	13.4	12.25	12.05	13.0	12.65
12	10.4	10.8	13.7	15.2	13.3	18.75	12.75	14.8	12.45	12.6	13.1	12.45
13	10.4	10.8	13.45	14.45	19.3	18.75	12.65	16.4	13.45	12.6	13.8	12.2
14	10.45	10.65	13.5	13.8	25.9	17.95	19.7	16.9	15.1	12.8	14.65	12.05
15	10.3	10.6	13.25	15.15	20.25	16.1	27.25	15.4	16.55	12.7	14.35	11.85
16	10.45	10.6	14.1	17.75	16.3	14.95	22.15	14.5	14.85	13.15	13.25	11.9
17	10.9	10.6	15.85	16.3	14.4	14.95	18.05	14.35	13.75	13.05	12.8	11.9
18	11.2	10.5	21.8	14.65	13.65	15.7	15.95	14.05	13.4	12.45	12.55	11.75
19	11.25	10.7	19.3	14.2	13.15	15.2	14.65	13.55	13.0	12.0	12.5	11.55
20	11.3	11.5	16.0	14.05	13.1	14.6	13.9	13.15	12.65	11.75	12.6	11.6
21	11.3	11.8	14.25	14.6	13.0	14.1	13.45	13.05	12.3	11.6	12.45	11.7
22	11.3	11.8	13.55	19.55	12.85	13.75	13.15	13.0	12.35	11.35	12.5	14.6
23	11.1	11.8	13.1	20.8	12.8	14.2	12.9	12.8	12.25	11.2	12.65	14.1
24	11.2	12.0	12.85	17.75	12.5	18.1	12.7	12.55	12.2	11.1	12.75	13.25
25	11.2	11.8	12.65	17.7	12.3	19.05	12.6	12.4	13.0	11.45	12.5	12.75
26	11.1	11.8	12.55	17.7	12.4	17.2	12.45	12.3	13.45	11.5	12.3	12.45
27	11.1	11.7	12.45	15.8	12.7	15.2	12.35	12.25	13.95	12.35	12.1	12.2
28	11.1	11.7	12.45	17.4	14.35	14.4	12.25	12.2	13.8	12.9	11.95	12.2
29	11.1	11.65	13.2	22.5	-------	13.7	15.0	12.1	17.25	12.75	11.95	12.0
30	11.2	11.6	14.0	22.3	-------	13.35	15.35	12.0	17.5	13.15	11.9	11.8
31	11.2	-------	13.65	17.15	-------	13.05	-------	11.85	-------	13.75	11.85	-------

OHIO BASIN—STATION NO. 24

YOUGHIOGHENY RIVER AT FRIENDSVILLE, MD.

Location.—At two-span steel highway bridge, Friendsville, Garrett County, about 6,000 feet upstream from the mouth of Bear Creek.

Drainage Area.—295 square miles.

Records Available.—August 17, 1898, to December 31, 1904, and September 1, 1922, to August 31, 1923, when the station was discontinued.

Gage.—Standard chain attached to upstream side of bridge; read to hundredths twice daily by J. W. Holman. Elevation of gage zero 1,467.82 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and rock. Low-water control is at a riffle, about 700 feet downstream from the gage, extending from the head of an island to the right and left banks, where the bed is composed of gravel and rock; probably permanent.

Extremes of Stage.—Maximum gage height during the period October 1 to September 1, estimated from hydrograph, 11.9 feet at 6 a. m. February 3; minimum, 3.74 feet at 5.45 p. m. October 5.

Ice.—Stage-discharge relation usually affected by ice.

Discharge measurements of Youghiogheny River at Friendsville, Md., during the year ending September 30, 1923.

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.ft.
16	Jan. 12	F. R. Corliss	4.96	588
17	23	do	6.35	1,880
18	31	J. M. Hand	5.55	1,110
19	Feb. 3	do	7.36	3,620
20	Aug. 9	C. B. McElrath	4.36	193

Daily Mean Gage Height, in feet, of Youghiogheny River at Friendsville, Md., for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.86	3.86	3.98	5.46	6.63	5.16	4.63	5.05	4.27	5.16	4.03	-------
2	3.85	3.86	3.98	6.61	8.83	5.03	4.65	4.88	4.22	4.96	4.03	-------
3	3.81	3.86	4.01	6.00	9.32	5.56	4.61	4.81	4.18	4.76	4.09	-------
4	3.77	3.84	4.39	5.60	6.81	5.53	4.64	4.72	4.14	4.66	4.20	-------
5	3.75	3.84	4.96	5.28	6.11	5.43	4.91	4.66	4.10	4.43	4.18	-------
6	3.76	3.85	4.52	5.07	5.69	5.33	5.77	4.62	4.18	4.73	4.07	-------
7	3.77	3.93	4.51	4.99	5.41	5.30	5.51	4.59	4.28	4.56	4.05	-------
8	3.80	3.93	4.68	5.06	5.29	5.25	5.21	4.57	4.39	4.24	4.07	-------
9	3.81	3.90	4.60	5.50	5.13	5.13	5.06	4.67	4.34	4.13	4.22	-------
10	3.89	3.90	4.54	5.78	5.14	5.77	4.95	4.98	4.20	4.36	4.29	-------
11	3.99	3.91	4.50	5.29	5.07	7.07	4.85	5.06	4.65	4.43	4.25	-------
12	4.03	3.92	4.46	4.90	4.87	7.06	4.75	5.71	4.80	5.18	4.05	-------
13	4.00	3.90	4.51	4.78	7.69	7.31	4.99	5.89	4.60	5.38	4.05	-------
14	3.94	3.90	4.56	5.01	7.69	6.61	7.50	5.79	4.50	4.71	4.05	-------
15	3.89	3.92	4.81	7.25	6.36	6.06	7.06	5.53	4.44	4.43	4.05	-------
16	3.86	3.94	5.31	6.48	5.69	5.91	6.76	5.43	4.40	4.42	4.00	-------
17	3.89	3.98	5.45	5.81	5.36	5.83	6.53	5.29	4.40	4.26	4.12	-------
18	3.92	3.99	6.15	5.55	5.20	5.63	6.16	5.03	4.34	4.20	4.08	-------
19	3.89	4.00	5.75	5.62	5.13	5.46	5.81	4.92	4.22	4.11	4.10	-------
20	3.87	3.98	5.19	6.21	4.99	5.33	5.56	4.81	4.18	4.11	4.08	-------
21	3.86	3.97	4.96	7.50	4.93	5.31	5.36	4.90	4.14	4.10	4.00	-------
22	3.84	4.05	4.74	7.12	4.81	5.29	5.17	4.96	4.07	4.08	4.15	-------
23	3.86	4.02	4.61	6.70	4.74	5.19	5.00	4.85	4.04	4.03	4.36	-------
24	3.89	3.99	4.57	6.18	4.69	5.39	4.85	4.70	5.32	4.03	4.20	-------
25	3.97	3.96	4.51	5.85	4.69	5.31	4.80	4.62	4.95	4.03	4.10	-------
26	3.94	3.96	4.48	5.50	4.53	5.33	4.73	4.54	4.73	4.03	4.00	-------
27	3.96	3.96	4.46	5.32	4.67	5.29	4.62	4.52	5.68	4.00	3.98	-------
28	3.93	3.96	4.71	6.15	5.32	5.07	4.87	4.48	5.88	4.10	3.98	-------
29	3.90	3.96	5.20	6.20	-------	4.95	5.73	4.42	6.99	4.09	3.98	-------
30	3.88	3.98	5.00	6.01	-------	4.88	5.36	4.38	5.96	4.09	4.00	-------
31	3.88	-------	4.89	5.88	-------	4.79	-------	4.33	-------	4.06	3.98	-------

Note.—Station discontinued August 31, 1923.

OHIO BASIN—STATION NO. 25

CASSELMAN RIVER AT MARKLETON

Location.—At two-span steel highway bridge, Markleton, Somerset County.

Drainage Area.—365 square miles.

Records Available.—August 13, 1913, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by N. B. Sanner.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Control is a 6 inch water main, backed with gravel and boulders, about 250 feet below gage, at the head of a series of riffles; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 6.6 feet at 11 a. m. February 2 (discharge, 6,010 second-feet); minimum, 1.59 feet at 8 a. m. October 2 (discharge, 18 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined below 2,500 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

The following discharge measurement was made by C. B. McElrath: No. 17, August 8: Gage height, 2.60 feet; discharge, 205 second-feet.

Daily Mean Gage Height, in feet, of Casselman River at Markleton, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.62	1.76	1.88	5.00	4.72	3.45	2.74	3.65	2.54	2.96	2.76	2.10
2	1.60	1.76	1.88	4.82	6.27	3.28	2.96	3.45	2.48	2.76	2.56	2.08
3	1.62	1.76	1.92	3.72	5.30	4.00	2.98	3.29	2.46	2.64	2.50	2.03
4	1.61	1.77	1.95	3.48	4.79	4.12	2.98	3.22	2.41	2.55	2.56	2.00
5	1.63	1.76	2.75	3.21	4.22	3.92	3.39	3.11	2.37	2.62	2.50	2.00
6	1.63	1.78	2.95	2.97	3.70	3.54	4.43	3.05	2.36	2.89	2.99	2.36
7	1.64	1.83	2.46	3.02	3.62	3.44	3.86	2.98	2.43	2.96	2.71	2.34
8	1.69	1.83	2.38	2.88	3.55	3.32	3.58	2.92	2.77	2.73	2.58	2.29
9	1.70	1.83	2.77	2.97	3.46	3.24	3.38	3.25	2.56	2.54	2.56	2.34
10	1.90	1.83	2.53	2.92	3.42	3.88	3.25	3.25	2.36	2.67	2.46	2.26
11	2.32	1.84	2.33	2.76	3.23	4.75	3.16	3.40	2.38	5.15	2.38	2.16
12	2.23	1.81	2.26	2.94	3.10	5.20	3.05	4.22	2.73	4.58	2.38	2.10
13	2.04	1.79	2.08	2.72	5.27	5.58	3.89	4.02	2.62	3.75	2.44	2.06
14	1.94	1.80	2.41	2.99	5.65	4.75	5.65	3.67	2.49	3.26	2.34	2.00
15	1.86	1.86	2.60	5.03	4.27	4.22	4.75	3.45	2.43	3.06	2.24	2.00
16	1.82	1.96	2.74	4.34	3.84	4.26	4.60	3.48	2.40	2.99	2.18	1.96
17	1.84	1.95	2.86	3.45	3.47	4.12	5.12	3.40	2.40	2.93	2.23	1.94
18	1.81	1.97	3.06	3.44	3.22	3.86	4.80	3.21	2.30	2.70	2.58	1.94
19	1.80	1.93	2.70	4.14	3.21	3.74	4.58	3.10	2.22	2.59	2.42	2.02
20	1.79	1.90	2.50	3.94	3.22	3.50	4.25	3.06	2.34	2.49	2.28	2.12
21	1.77	1.88	2.38	5.05	3.14	3.52	3.95	3.41	2.44	2.44	2.19	2.30
22	1.78	1.86	2.42	5.40	3.05	3.55	4.10	3.21	2.35	2.36	2.81	2.50
23	1.78	1.88	2.40	4.36	2.90	4.02	3.64	3.06	2.48	2.35	2.46	2.28
24	1.85	1.88	2.34	3.90	2.77	4.36	3.46	2.97	2.32	2.34	2.33	2.16
25	1.89	1.78	2.36	3.78	2.88	3.92	3.28	2.89	3.04	2.38	2.23	2.08
26	1.84	1.81	2.60	3.52	2.83	3.69	3.17	2.82	2.60	2.32	2.16	2.06
27	1.88	1.85	2.85	3.75	3.38	3.55	3.11	2.80	2.84	2.24	2.13	1.98
28	1.84	1.86	4.00	4.10	3.75	3.38	3.29	2.73	3.05	2.59	2.23	1.95
29	1.80	1.84	3.89	4.28	-------	3.15	4.61	2.67	4.30	2.68	2.23	1.94
30	1.78	1.85	3.13	3.76	-------	3.26	3.98	2.62	3.23	2.48	2.18	1.93
31	1.76	-------	3.14	3.70	-------	3.14	-------	2.58	-------	3.22	2.12	-------

Note.—Stage-discharge relation Dec. 14-25, Jan. 7-13, 15-20, Feb. 7-11 and 19-26 affected by ice.

Daily discharge, in second-feet, of Casselman River at Markleton, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19	28	38	2,430	1,990	671	247	841	178	346	255	68
2	18	28	38	2,130	5,200	556	346	671	160	255	184	65
3	19	28	42	886	2,950	1,170	356	556	155	210	166	57
4	19	28	46	711	2,130	1,270	356	486	141	181	184	52
5	20	28	251	486	1,370	1,070	631	421	130	203	166	52
6	20	29	341	351	886	753	1,600	394	128	312	361	128
7	20	33	155	300	700	671	1,020	356	146	346	235	122
8	23	33	133	260	550	556	796	326	259	243	190	110
9	24	33	259	240	480	521	631	521	184	178	184	122
10	40	33	175	220	460	1,070	521	521	128	220	155	102
11	117	34	120	200	420	2,130	453	631	133	2,770	133	80
12	95	31	102	200	421	2,770	394	1,370	243	1,850	133	68
13	58	29	65	220	2,950	3,520	1,070	1,170	208	932	149	62
14	45	30	60	361	3,520	2,130	3,520	841	163	521	122	52
15	36	36	50	550	1,480	1,370	2,130	671	146	394	98	52
16	32	47	46	420	1,020	1,480	1,850	711	138	361	84	47
17	34	46	46	420	671	1,270	2,590	631	138	331	95	45
18	31	48	46	460	486	1,020	2,130	486	112	231	190	45
19	30	44	40	600	360	932	1,850	421	93	193	144	55
20	29	40	40	1,000	280	711	1,370	394	122	163	107	72
21	28	38	40	2,430	240	711	1,120	631	149	149	86	135
22	29	36	40	3,130	220	753	1,270	486	125	128	276	166
23	29	38	46	1,600	200	1,170	841	394	160	125	155	107
24	35	38	60	1,070	200	1,600	671	351	117	122	120	80
25	39	29	110	978	220	1,070	556	312	394	133	95	65
26	34	31	196	711	260	886	453	280	196	117	80	62
27	38	35	294	932	631	753	421	271	289	98	74	50
28	34	36	1,170	1,270	932	631	556	243	394	193	95	46
29	30	34	1,070	1,480	-------	453	1,850	220	1,480	224	95	45
30	29	35	453	932	-------	521	1,170	203	521	160	84	44
31	28	-------	453	886	-------	453	-------	190	-------	486	72	-------

Note.—Discharge Dec. 14-25, Jan. 7-13, 15-20, Feb. 7-11 and 19-26 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Laurel Hill Creek at Ursina, Youghiogheny River at Connellsville and Stony Creek at Johnstown.

Monthly discharge of Casselman River at Markleton, for the year ending September 30, 1923.
(Drainage area 365 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	117	18	34.9	0.096	0.11
November	48	28	34.5	.095	.11
December	1,170	38	194	.532	.61
January	3,130	200	899	2.46	2.84
February	5,200	200	1,120	3.07	3.20
March	3,520	453	1,120	3.07	3.54
April	3,520	247	1,090	2.99	3.34
May	1,370	190	516	1.41	1.63
June	1,480	93	231	.633	.71
July	2,770	98	393	1.08	1.24
August	361	72	147	.403	.46
September	166	44	75.2	.206	.23
The Year	5,200	18	483	1.33	18.02

OHIO BASIN—STATION NO. 26

LAUREL HILL CREEK AT URSINA

Location.—At two-span steel highway bridge, Ursina, Somerset County.

Drainage Area.—122 square miles.

Records Available.—August 12, 1913, to September 30, 1923.

Gage.—Standard chain attached to upstream side of bridge; read by Miss Lizzie R. Case.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and boulders. Control is at a riffle, where the bed is composed of gravel and boulders, a short distance below the gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 5.1 feet at 6 a. m. July 11 (discharge, 2,570 second-feet); minimum, estimated from hydrograph, 1.6 feet at 8 a. m. October 4 (discharge, 5.7 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 2,400 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

The following discharge measurement was made by C. B. McElrath: No. 18, August 9: Gage height, 2.26 feet; discharge, 129 second-feet.

Daily Mean Gage Height, in feet, of Laurel Hill Creek at Ursina, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.66	1.67	1.66	3.62	3.19	2.50	2.24	2.47	2.33	3.68	2.81	1.99
2	1.63	1.70	1.69	3.30	4.22	3.02	2.22	2.33	2.03	2.35	2.40	1.93
3	-------	1.68	1.70	2.83	4.17	3.52	2.19	2.32	2.14	2.33	2.32	1.92
4	-------	1.74	2.02	2.64	3.67	3.35	2.22	2.33	2.18	2.12	2.35	1.88
5	-------	1.73	2.30	2.39	3.18	3.42	3.26	2.25	1.90	2.06	2.42	1.94
6	-------	1.70	2.30	2.35	2.80	2.82	3.59	2.20	2.20	2.44	2.44	2.44
7	1.67	1.70	2.06	2.24	2.70	2.68	3.12	2.09	2.36	3.03	2.40	2.12
8	1.79	1.72	2.14	1.98	2.60	2.68	2.80	2.18	2.43	2.12	2.49	2.12
9	1.76	1.70	2.72	2.19	2.38	2.58	2.64	2.30	2.10	2.04	2.22	2.14
10	1.84	1.70	2.62	2.28	2.21	3.26	2.46	2.24	2.07	2.05	2.16	2.04
11	1.92	1.66	1.98	2.26	2.22	3.44	2.44	2.78	2.08	4.52	2.15	2.12
12	1.90	1.68	2.07	2.27	2.25	4.25	2.34	3.36	2.10	3.82	2.30	2.02
13	1.82	1.65	1.96	2.13	3.80	4.37	2.42	3.16	2.08	3.16	2.22	1.96
14	1.76	1.72	2.15	2.25	4.35	4.06	3.92	2.80	1.95	2.65	2.14	1.76
15	1.69	1.77	2.26	2.28	3.69	3.24	3.30	2.64	2.00	2.49	2.05	1.86
16	1.73	1.88	2.25	2.22	2.75	3.04	3.28	2.71	1.97	2.53	1.95	1.90
17	1.76	1.75	2.86	2.25	2.76	2.94	3.36	2.67	2.02	2.38	2.03	1.86
18	1.74	1.73	3.68	2.44	2.59	2.77	3.23	2.46	2.41	2.30	2.14	1.86
19	1.69	1.72	2.34	3.02	2.44	2.68	3.01	2.24	1.82	2.12	2.32	2.18
20	1.71	1.66	2.18	3.35	2.40	2.50	2.96	2.34	1.93	2.06	1.97	2.29
21	1.69	1.66	2.10	3.82	2.43	2.49	2.61	2.40	1.92	2.00	1.99	2.05
22	1.64	1.70	2.12	4.12	2.37	2.50	2.64	2.33	1.86	1.92	2.32	2.04
23	1.66	1.78	2.18	3.55	2.44	2.98	2.50	2.25	2.32	1.87	2.20	2.04
24	1.75	1.72	2.06	3.23	2.20	3.30	2.44	2.35	2.21	2.14	2.08	1.98
25	1.73	1.68	2.15	3.09	2.34	2.88	2.30	2.26	2.76	2.01	2.15	1.89
26	1.74	1.67	2.50	2.52	2.21	2.26	2.28	2.19	2.41	1.98	1.79	1.86
27	1.68	1.70	2.29	2.62	2.49	2.14	2.24	2.18	2.60	1.97	1.90	1.81
28	1.66	1.74	3.29	3.22	2.76	2.37	2.43	2.16	2.52	2.47	1.96	1.88
29	1.56	1.77	3.18	3.47	-------	2.26	2.87	2.14	3.12	2.86	1.94	1.88
30	1.70	1.78	2.57	2.83	-------	2.42	2.62	2.14	2.84	2.63	2.02	1.88
31	1.70	-------	2.56	2.71	-------	2.28	-------	2.28	-------	2.82	2.04	-------

NOTE.—Gage height Oct. 3-6 unsatisfactory. Stage-discharge relation Dec. 14-26 and Feb. 17-26 affected by ice.

Daily discharge, in second-feet, of Laurel Hill Creek at Ursina, for the year ending Sept. 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.0	9.7	9.0	980	685	245	129	230	164	348	426	58
2	7.2	12	11	755	1,530	550	122	186	68	172	195	46
3	6.2	10	12	440	1,530	900	112	159	97	164	159	44
4	5.7	17	65	324	1,020	790	122	164	109	91	172	37
5	6.2	16	150	190	685	825	720	132	40	75	205	48
6	6.7	12	150	172	420	433	980	115	115	215	215	215
7	9.7	12	75	129	360	348	615	80	177	582	195	91
8	24	15	97	56	300	348	420	109	210	91	240	91
9	20	12	372	112	186	289	324	150	85	70	122	97
10	31	12	312	143	118	720	225	129	78	72	103	70
11	44	9.0	56	136	122	862	215	408	80	1,840	100	91
12	40	10	78	140	132	1,530	168	790	85	1,160	150	65
13	28	8.3	52	94	1,250	1,730	205	650	80	650	122	52
14	20	15	40	132	1,730	1,430	1,250	420	50	330	97	20
15	11	21	26	143	1,070	720	755	324	60	240	72	34
16	16	37	26	122	390	582	755	366	54	262	50	40
17	20	18	26	132	300	511	790	342	65	186	68	34
18	17	16	26	215	200	402	720	225	200	150	97	34
19	11	15	26	550	150	348	550	129	28	91	159	109
20	13	9.0	26	790	110	245	524	168	46	75	54	146
21	11	9.0	26	1,160	110	240	306	195	44	60	58	72
22	7.7	12	32	1,430	100	245	324	164	34	44	159	70
23	9.0	22	40	940	85	537	245	132	159	36	115	70
24	18	15	60	720	85	755	215	172	118	97	80	37
25	16	10	85	615	85	472	150	136	396	62	100	38
26	17	9.7	100	256	85	136	143	112	200	56	15	34
27	10	12	146	312	240	97	129	109	300	54	40	31
28	9.0	17	755	685	396	182	210	103	256	230	52	37
29	4.2	21	685	862	-------	136	466	97	615	459	48	37
30	12	22	284	440	-------	205	312	97	446	318	65	37
31	12	-------	278	366	-------	143	-------	143	-------	433	70	-------

NOTE.—Discharge Oct. 3-6 estimated, because of unsatisfactory gage height record, from discharge of Casselman River at Markleton and Stony Creek at Johnstown. Discharge Dec. 14-26 and Feb. 17-26 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Casselman River at Markleton, Stony Creek at Johnstown, Loyalhanna Creek at New Alexandria and Raystown Branch Juniata River at Saxton.

Monthly discharge of Laurel Hill Creek at Ursina, for the year ending September 30, 1923.
(Drainage area 122 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	44	5.7	15.2	0.125	0.14
November	37	8.3	14.5	.119	.13
December	755	9.0	133	1.09	1.26
January	1,430	56	437	3.58	4.13
February	1,730	85	481	3.94	4.10
March	1,730	97	547	4.48	5.16
April	1,250	112	407	3.34	3.73
May	790	80	217	1.78	2.05
June	615	28	149	1.22	1.36
July	1,840	36	281	2.30	2.65
August	426	15	123	1.01	1.16
September	215	20	62.8	.515	.57
The Year	1,840	5.7	238	1.95	26.44

OHIO BASIN—STATION NO. 27

YOUGHIOGHENY RIVER AT CONNELLSVILLE

Location.—At two-span steel highway bridge between New Haven and Connellsville, Fayette County.

Drainage Area.—1,320 square miles.

Records Available.—July 22, 1908, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by Peter M. Rulli. Elevation of gage zero 860.13 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and rocks. Control is at a riffle about 500 feet below gage where bed is rock formation; permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 8.9 feet at 2 p. m. February 2 (discharge, 18,000 second-feet); minimum, 0.20 foot at 8 a. m. October 7 (discharge, 40 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year. Rating curve well defined below 30,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

The following discharge measurement was made by C. B. McElrath: No. 36, August 10: Gage height, 1.71 feet; discharge, 757 second-feet.

Daily Mean Gage Height, in feet, of Youghiogheny River at Connellsville, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.59	0.64	0.95	4.54	5.17	3.48	2.89	3.45	1.55	2.94	2.02	0.88
2	.51	.59	.82	5.98	8.22	3.05	2.32	3.01	1.49	2.38	1.60	.84
3	.55	.61	.79	4.47	7.78	3.75	2.23	2.79	1.40	2.07	1.37	.74
4	.47	.63	.96	3.62	6.69	4.30	2.19	2.57	1.28	1.86	1.58	.85
5	.41	.52	1.29	3.19	4.95	4.05	2.65	2.33	1.29	1.64	1.48	1.12
6	.43	-------	2.45	2.78	4.02	3.68	4.76	2.35	1.38	1.77	1.64	1.43
7	.41	-------	2.07	2.54	3.55	3.34	4.35	2.23	1.55	2.07	1.68	1.27
8	.31	-------	1.65	2.45	3.45	3.05	3.73	1.93	1.97	2.00	1.69	1.31
9	.55	-------	2.15	2.56	3.18	2.82	3.32	2.26	1.92	1.70	1.93	1.31
10	.72	-------	2.18	3.17	2.99	3.98	2.99	2.65	1.62	1.49	1.66	1 24
11	.73	-------	1.75	2.72	2.95	6.21	2.75	2.77	1.50	5.24	1.46	1.17
12	.80	.55	1.53	2.68	2.50	6.60	2.52	4.40	1.77	4.39	1.37	1.01
13	1.01	.66	1.21	2.42	5.87	7.45	2.61	4.63	1.97	3.9[illegible]	1.42	1.[illegible]
14	.94	.75	1.28	2.48	8.00	5.90	7.55	4.18	1.75	3.06	1.38	.80
15	.81	.82	1.63	5.96	5.62	4.62	6.82	3.58	1.67	2.50	1.23	.83
16	.76	.97	2.10	5.50	4.38	4.15	6.05	3.47	1.76	2.25	1.12	.71
17	.81	1.03	3.15	4.10	3.82	4.39	6.12	3.35	1.70	2.37	1.07	.80
18	.73	1.00	4.36	3.44	3.40	3.83	5.42	2.96	1.47	1.93	1.21	.86
19	.70	.94	3.16	4.02	3.01	3.50	4.82	2.72	1.35	1.71	1.31	.78
20	.73	1.05	2.34	3.99	2.84	3.13	4.41	2.61	1.24	1.53	1.23	.87
21	.71	.94	1.92	5.16	2.60	3.05	3.95	2.88	1.20	1.41	1.09	1.03
22	.68	.99	1.93	6.55	2.30	3.08	3.47	2.92	1.28	1.39	1.51	1.87
23	.65	.94	1.76	5.58	2.07	4.13	3.25	2.65	1.56	1.20	1.63	1.60
24	.86	.93	1.70	4.59	1.79	4.99	3.03	2.28	1.50	1.06	1.45	1.96
25	.84	.83	1.56	4.05	2.20	4.41	2.69	2.25	2.21	1.18	1.28	1 09
26	.84	.75	1.58	3.51	1.55	3.88	2.52	2.13	2.35	.91	1.13	.91
27	.82	.50	1.75	3.46	2.47	3.45	2.32	2.01	2.54	.98	1.02	.80
28	.75	.66	2.49	5.23	3.65	3.10	2.43	1.97	2.80	1.69	1.02	.82
29	.75	.70	4.02	5.32	-------	2.89	4.80	1.89	4.74	2.00	.98	.68
30	.73	.68	3.27	4.60	-------	2.75	4.03	1.54	4.11	1.81	1.08	.61
31	.62	-------	2.66	4.09	-------	2.29	-------	1.62	-------	2.12	.99	-------

NOTE.—Gage height Nov. 6-11 unsatisfactory.

Daily discharge, in second-feet, of Youghiogheny River at Connellsville, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	118	132	245	4,680	6,230	2,910	2,010	2,750	605	2,010	960	212
2	98	118	188	8,320	15,500	2,150	1,260	2,150	570	1,370	640	196
3	108	123	177	4,680	14,100	3,400	1,200	1,870	500	1,000	470	162
4	89	129	250	3,070	10,400	4,290	1,150	1,610	440	830	640	200
5	77	100	440	2,450	5,770	3,740	1,610	1,320	440	675	570	325
6	81	100	1,430	1,870	3,740	3,230	5,320	1,320	500	750	675	535
7	77	100	1,000	1,490	3,070	2,600	4,480	1,200	605	1,000	710	410
8	57	100	675	1,490	2,750	2,150	3,230	915	915	960	710	440
9	108	100	1,100	1,610	2,450	1,870	2,600	1,200	870	710	915	440
10	156	100	1,150	2,450	2,150	3,740	2,150	1,610	640	570	675	410
11	159	100	750	1,740	2,150	8,900	1,870	1,870	570	6,230	535	352
12	180	108	605	1,740	1,490	10,100	1,490	4,480	750	4,480	470	270
13	270	138	380	1,370	8,040	12,800	1,610	4,890	915	3,570	505	280
14	240	165	440	1,490	14,800	8,040	13,400	4,100	750	2,300	500	180
15	184	188	675	8,320	7,230	4,890	10,800	3,070	675	1,490	410	192
16	168	255	1,050	6,970	4,480	4,100	8,320	2,910	750	1,200	325	153
17	184	298	2,450	3,920	3,400	4,480	8,610	2,750	710	1,320	298	180
18	159	270	4,480	2,750	2,750	3,400	6,720	2,150	535	915	380	204
19	150	240	2,450	3,740	2,150	2,910	5,320	1,740	470	710	440	174
20	159	298	1,320	3,740	1,870	2,300	4,480	1,610	410	605	410	208
21	153	240	870	6,230	1,610	2,150	3,740	2,010	380	500	325	298
22	144	265	915	10,100	1,260	2,300	2,910	2,010	440	500	570	830
23	135	240	750	7,230	1,000	3,920	2,450	1,610	605	380	675	640
24	204	235	710	4,890	790	5,770	2,150	1,260	570	298	535	410
25	196	192	605	3,740	1,150	4,480	1,740	1,200	1,150	380	440	325
26	196	165	640	2,910	605	3,570	1,490	1,100	1,320	225	352	295
27	188	95	750	2,910	1,430	2,750	1,260	960	1,490	260	270	180
28	165	138	1,490	6,230	3,070	2,300	1,430	915	1,870	710	270	188
29	165	156	3,740	6,470	-------	2,010	5,320	870	5,100	960	260	144
30	159	144	2,600	4,890	-------	1,870	3,740	605	3,920	790	325	123
31	126	-------	1,740	3,920	-------	1,260	-------	640	-------	1,050	265	-------

NOTE.—Dicharge Nov. 6-11 estimated because of unsatisfactory gage height record, from discharge of Youghiogheny River at Sutersville.

Monthly discharge of Youghiogheny River at Connellsville, for the year ending September 30, 1923.

(Drainage area 1,320 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	270	57	150	0.114	0.13
November	298	95	168	.127	.14
December	4,480	177	1,160	.879	1.01
January	10,100	1,370	4,110	3.11	3.58
February	15,500	605	4,480	3.39	3.53
March	12,800	1,260	4,010	3.04	3.50
April	13,400	1,150	3,800	2.88	3.21
May	4,890	605	1,890	1.43	1.65
June	5,100	380	982	.744	.83
July	6,230	225	1,250	.947	1.09
August	960	260	502	.380	.44
September	830	123	300	.227	.25
The Year	15,500	57	1,890	1.43	19.36

OHIO BASIN—STATION NO. 28

YOUGHIOGHENY RIVER AT SUTERSVILLE

Location.—At three-span steel highway bridge, Sutersville, Westmoreland County.

Drainage Area.—1,680 square miles.

Records Available.—June 11, 1915, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by Archie McGrew and Paul Jesick. Elevation of gage zero 733.14 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge.

Channel and Control.—Right bank is low and subject to overflow; left is high and does not overflow. Bed is composed of shifting sand and gravel overlaying a rocky bed. Control is at a riffle about 400 feet downstream from gage at right side of stream; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 11.4 feet at 6 a. m. February 14 (discharge, 17,600 second-feet); minimum, 2.18 feet at 9 a. m. October 8 (discharge, 75 second feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 400 and 1,600 second-feet and fairly well defined from 1,600 to 40,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

The following discharge measurement was made by C. B. McElrath: No. 17, August 11: Gage height, 3.20 feet; discharge, 782 second-feet.

Daily Mean Gage Height, in feet, of Youghiogheny River at Sutersville, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		2.40		5.45	6.49	7.62		5.58	3.41	5.96	3.91	2.74
2		2.38		8.13	9.83	6.47	4.17	5.07	3.32	5.61	3.69	
3		2.37		6.46	9.95	6.45	4.11	4.70	3.24	5.30	3.44	
4	2.26	2.36		5.68	9.37	6.27	4.04	4.44	3.18	4.93	3.34	
5		2.34		5.16	7.51	5.67		4.31	3.14	4.45	3.29	
6		2.33		5.04	6.33	5.31		4.18		4.35		3.27
7		2.36		4.91	5.55	5.87		4.08		4.02		3.35
8	2.20	2.38			5.15	5.27		4.00		3.68		3.05
9	2.39	2.35		4.56	4.99	4.95		3.96		3.42		3.21
10		2.33		5.50	4.89	5.51		4.06		3.21		3.13
11		2.32		5.05	4.69	7.57		4.36	3.28	4.81	3.24	2.98
12		2.32		4.64	4.48	8.64	4.44	6.07	3.55	6.13	3.19	3.00
13			3.10	4.32	7.52	9.84		7.13		5.57		2.90
14			2.92	4.11	10.73	8.05		6.36		5.07		2.75
15			3.35	6.27	8.29	6.75		5.40		4.67	3.12	2.64
16	2.51		3.68	7.59	6.47	6.05		5.11		4.20	3.10	2.59
17			4.53	6.22	8.10	6.05		5.35		3.97	2.98	2.54
18			6.43	5.91	9.10	5.81		5.11		3.75	2.96	2.61
19		2.71	6.44	6.04	8.57	5.49			3.18	3.51		2.66
20			5.30	5.93	8.27	5.13			3.12	3.24		2.68
21			4.25	6.11	7.97	4.95		4.64	3.07	3.10		2.73
22			3.80	8.29	7.37	4.95		4.54		3.00		2.76
23			3.56	7.68	6.97	5.68		4.46		2.91		3.44
24			3.42	6.98	6.57	6.99		4.40		2.99		3.14
25			3.30	5.80	6.37	6.51		3.93		2.91	3.10	2.95
26			3.24	5.59	7.17	5.93	4.36	3.84		2.89	3.01	2.84
27		2.40	3.26	5.32	7.79	5.51	4.13	3.76		2.87	2.99	2.72
28			4.10	6.38	8.27	5.19		3.70		3.13	2.84	2.56
29			6.44	7.88		4.89		3.63		3.72	2.79	2.61
30			5.26	6.70		4.79		3.56		3.64		2.49
31	2.42		4.60	6.04		4.71		3.48		3.55		

NOTE.—Gage height Oct. 1-3, 5-7, 10-14, 17-30, Nov. 13-18, 20-26, Nov. 28 to Dec. 12, Apr. 5-11, 13-25, 28-30, June 6-10, 13-18, 22-30, Aug. 6-10, 13, 14, 19-24, 30 and 31 unsatisfactory; Oct. 15, Jan. 8, Apr. 1, May 19 and 20 and Sept. 2-5 not observed. Stage discharge relation Feb. 17 to Mar. 3 affected by ice.

Daily discharge, in second-feet, of Youghiogheny River at Sutersville, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		145		3,270	5,400	4,000	1,900	3,630	760	4,400	1,240	290
2	140	138		8,840	13,100	3,000	1,580	2,790	680	3,630	1,040	240
3		134		5,400	13,600	4,200	1,460	2,210	640	3,100	895	500
4	98	131		3,810	12,000	5,000	1,350	1,820	600	2,490	720	260
5		124		2,940	7,500	3,810		1,700	560	1,820	680	400
6	100	190	850	2,640	5,000	3,100		1,580		1,820		640
7		131		2,490	3,630	4,200		1,460		1,350		720
8	80	138		2,900	2,940	3,100	3,800	1,350	900	1,040	950	485
9	142	128		2,080	2,640	2,640		1,290		760		600
10		120		3,450	2,490	3,450		1,460		600		560
11		117		2,640	2,210	7,750		1,820	680	2,350	640	450
12		117		2,080	1,950	10,000	1,820	4,600	895	4,600	600	430
13	200		520	1,700	7,500	13,100		6,620		3,630		340
14			390	1,460	15,600	8,600		5,200		2,790	650	292
15			720	5,000	9,320	6,000		3,270		2,210	520	251
16	182	280	1,040	7,500	5,400	4,400		2,790	900	1,580	520	227
17			1,950	4,800	4,000	4,400		3,270		1,290	450	290
18			5,900	4,200	3,200	4,000	7,000	2,790		1,090	420	297
19		275	5,200	4,400	2,800	3,450		2,200	600	850		251
20			3,100	4,200	2,400	2,790		2,000	520	640		575
21			1,580	4,600	2,000	2,640		2,080	485	520		292
22			1,140	9,320	1,600	2,640		1,950		450	600	292
23	220	300	895	7,940	1,200	3,810		1,950		390		905
24			805	5,000	1,000	6,200		1,800		420		560
25			680	4,000	1,500	5,400		1,290		390	520	420
26			640	3,630	800	4,200	1,820	1,190	2,400	390	450	360
27		145	640	3,100	1,800	3,450	1,460	1,090		360	390	275
28			1,460	5,200	3,800	2,940		1,040		560	360	500
29		180	5,200	8,380		2,490	4,400	990		1,040	330	297
30			3,100	5,800		2,350		895		990		178
31	152		2,080	4,400		2,210		850		895	380	

NOTE.—Discharge estimated Oct. 1-3, 5-7, 10-14, 17-30, Nov. 13-18, 20-26, Nov. 28 to Dec. 12, Apr. 5-11, 13-25, 28-30, June 6-10, 13-18, 22-30, Aug. 6-10, 13, 14, 19-24, 30 and 31, because of unsatisfactory gage height record, and Oct. 15, Jan. 8, Apr. 1, May 19 and 20, and Sept. 2-5, because of no gage height record, from discharge of Youghiogheny River at Connellsville. Discharge Feb. 17 to Mar. 3 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Youghiogheny River at Connellsville.

Monthly discharge of Youghiogheny River at Sutersville, for the year ending September 30, 1923.
(Drainage area 1,680 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	220	80	182	0.108	0.12
November	300	117	209	.124	.14
December	5,200	390	1,500	.893	1.03
January	9,320	1,460	4,400	2.62	3.02
February	15,600	800	4,870	2.90	3.02
March	13,100	2,210	4,490	2.67	3.08
April	7,000	1,350	4,740	2.82	3.15
May	6,620	850	2,230	1.33	1.53
June	2,400	485	1,260	.750	.84
July	4,600	360	1,560	.929	1.07
August	1,240	330	610	.363	.42
September	805	178	369	.220	.25
The Year	15,600	80	2,190	1.30	17.67

OHIO BASIN—STATION NO. 29

TURTLE CREEK NEAR TRAFFORD

Location.—At single-span steel highway bridge, Blackburn Station, Pennsylvania Railroad, about one and a quarter miles northeast of Trafford, Westmoreland County.

Drainage Area.—55 square miles.

Records Available.—July 28, 1914, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by S. T. Churchfield.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of hardpan and gravel; not subject to change. Control is at a riffle about 50 feet downstream from the gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 5.2 feet at 7 p. m. May 12 (discharge, about 2,480 second-feet); minimum, 0.10 foot from 5.10 p. m. October 6 to 6.50 a. m. October 7 (discharge, 0.1 second-foot).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 300 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for high stages when they are fair.

The following discharge measurement was made by C. B. McElrath: No. 26, August 11: Gage height, 0.75 foot; discharge, 12.7 second-feet.

Daily Mean Gage Height, in feet, of Turtle Creek near Trafford, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.18	0.40	0.54	1.55	1.90	1.65	1.19	1.21	0.87	0.79	0.90	1.03
2	.16	.37	.45	1.51	1.77	1.45	1.15	1.17	.78	.74	.80	.98
3	.16	.32	.39	1.44	1.79	1.34	1.12	1.09	.72	.70	.76	1.00
4	.14	.27	.52	1.25	1.65	1.36	1.15	.98	.68	.67	.79	1.06
5	.12	.23	1.19	1.11	1.56	1.35	1.19	.93	.65	.65	.76	1.21
6	.10	.32	1.17	1.11	1.49	1.38	1.17	.90	.61	.72	.80	1.77
7	.11	.47	1.18	1.09	1.39	1.46	1.13	.88	.59	.73	.81	1.32
8	.15	.46	1.18	1.16	1.31	1.51	1.09	.99	.69	.71	.80	1.29
9	.22	.40	1.12	1.29	1.27	1.60	1.05	1.06	.67	.68	.78	1.23
10	.93	.35	1.03	1.48	1.25	1.81	1.01	1.03	.64	.69	.74	1.15
11	1.23	.29	.93	1.46	1.23	1.95	.98	1.34	.80	.88	.70	1.02
12	1.22	.23	.83	1.38	1.25	1.99	.95	3.70	.91	.92	.69	.93
13	1.19	.20	.95	1.32	2.34	1.77	1.03	2.89	.84	.90	.68	.88
14	1.15	.24	1.11	1.70	2.25	1.61	2.06	2.04	.80	.86	.65	.85
15	1.12	1.13	1.09	1.94	2.05	1.47	2.11	1.89	1.08	.82	.63	.82
16	1.06	1.36	1.02	1.78	1.80	1.48	2.02	1.85	1.24	.88	.61	.76
17	.99	1.31	1.26	1.64	1.56	1.40	1.80	1.66	1.10	.84	.59	.71
18	.93	1.33	1.17	1.43	1.49	1.33	1.55	1.45	1.00	.81	.56	.64
19	.86	1.36	1.11	1.31	1.48	1.27	1.38	1.34	.92	.79	.53	.65
20	.78	1.32	1.03	1.26	1.43	1.23	1.31	1.40	.83	.76	.55	.68
21	.72	1.27	.97	1.61	1.40	1.19	1.27	1.47	.78	.73	.53	.67
22	.66	1.24	.93	1.64	1.39	1.34	1.20	1.41	.75	.65	.70	.64
23	.65	1.18	.90	1.56	1.38	2.30	1.13	1.36	.76	.59	.66	.58
24	.69	1.06	.87	1.47	1.35	2.20	1.09	1.30	.72	.56	.63	1.03
25	.62	.98	.84	1.34	1.45	1.80	1.05	1.24	.80	.60	.59	.91
26	.64	.92	.81	1.29	1.85	1.55	1.01	1.13	.88	.58	.56	.86
27	.59	.87	.77	1.35	2.22	1.46	.97	1.08	1.07	.56	.53	.82
28	.55	.78	1.30	3.77	1.90	1.39	.98	1.06	.96	1.29	1.28	.78
29	.49	.70	1.43	3.55	-------	1.32	1.38	1.02	.90	1.40	1.42	.84
30	.46	.62	1.33	3.00	-------	1.27	1.28	.97	.86	1.12	1.22	.80
31	.43	-------	1.30	2.45	-------	1.23	-------	.93	-------	1.00	1.09	-------

Note.—Stage-discharge relation Dec. 13-27, Jan. 6-12 and Jan. 28 to Feb. 27 affected by ice.

Daily discharge, in second-feet, of Turtle Creek near Trafford, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4	1.9	3.3	122	180	150	52	55	16	10	18	32
2	.3	1.6	2.3	112	150	98	46	49	9.7	7.8	11	26
3	.3	1.3	1.8	96	140	76	43	39	7.0	6.4	8.7	28
4	.2	.9	3.1	61	110	80	46	26	5.9	5.6	10	35
5	.1	.7	52	41	85	78	52	21	5.2	5.2	8.7	55
6	.1	1.3	49	34	70	83	49	18	4.4	7.0	11	189
7	.1	2.5	50	28	55	100	44	17	4.0	7.4	12	73
8	.3	2.4	50	26	46	112	39	27	6.2	6.7	11	67
9	.6	1.9	43	34	40	135	34	35	5.6	5.9	9.7	58
10	21	1.5	32	46	42	203	29	32	5.0	6.2	7.8	46
11	58	1.1	21	42	46	258	26	76	11	17	6.4	30
12	56	.7	13	46	55	275	23	1,280	19	20	6.2	21
13	52	.5	11	73	340	189	32	747	14	18	5.9	17
14	46	.8	11	165	320	138	301	301	11	15	5.2	14
15	43	44	11	254	300	102	323	233	38	12	4.8	12
16	35	80	11	192	120	94	279	218	59	17	4.4	8.7
17	27	71	11	147	80	87	199	153	40	14	4.0	6.7
18	21	74	10	94	60	74	122	98	28	12	3.6	5.0
19	15	80	8	71	46	64	83	76	20	10	3.2	5.2
20	9.7	73	7	63	40	58	71	87	13	8.7	3.5	5.9
21	7.0	64	6	138	34	52	64	102	9.7	7.4	3.2	5.6
22	5.4	59	6	147	34	76	53	89	8.2	5.2	6.4	5.0
23	5.2	50	6	125	30	417	44	80	8.7	4.0	5.4	3.9
24	6.2	35	6	102	34	369	39	69	7.0	3.6	4.8	32
25	4.6	26	6	76	40	199	34	59	11	4.2	4.0	19
26	5.0	20	7	67	60	122	29	44	17	3.9	3.6	15
27	4.0	16	10	78	110	100	25	38	36	3.6	3.2	12
28	3.5	9.7	69	200	237	85	26	35	24	67	66	9.7
29	2.7	6.4	94	340	-------	73	83	30	18	87	91	14
30	2.4	4.6	74	300	-------	64	66	25	15	43	56	11
31	2.2	-------	69	240	-------	58	-------	21	-------	28	39	-------

Note.—Discharge Dec. 13-27, Jan. 6-12 and Jan. 28 to Feb. 27 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Loyalhanna Creek at New Alexandria, Chartiers Creek at Carnegie and Crooked Creek at Hileman's Farm.

Monthly discharge of Turtle Creek near Trafford, for the year ending Sept. 30, 1923.
(Drainage area 55 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	58	0.1	14.0	0.255	0.29
November	80	.5	24.4	.444	.50
December	94	1.8	24.3	.442	.51
January	340	26	115	2.09	2.41
February	340	30	100	1.82	1.90
March	417	52	131	2.38	2.74
April	323	23	78.5	1.43	1.60
May	1,280	17	135	2.45	2.82
June	59	4.0	15.9	.289	.32
July	87	3.6	15.1	.275	.32
August	91	3.2	14.1	.256	.30
September	189	3.9	28.7	.522	.58
The Year	1,280	.1	57.9	1.05	14.29

OHIO BASIN—STATION NO. 30

CHARTIERS CREEK AT CARNEGIE

Location.—At single-span steel railroad bridge, known as Freight House Bridge, siding of the Chartiers Branch, Pittsburgh, Cincinnati, Chicago & St. Louis R. R., Carnegie, Allegheny County.

Drainage Area.—260 square miles.

Records Available.—June 5, 1915, to September 30, 1923.

Gage.—Standard chain attached to downstream side of Freight House Bridge; read by F. J. Wenger.

Discharge Measurements.—Made from downstream side of Freight House Bridge, upstream side of Branch Line Bridge about 100 feet upstream from gage, or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of mud and slag over a rocky floor. Control is at the first of a series of riffles about 600 feet downstream from gage; practically permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 8.5 feet at 3 a. m. May 13 (discharge, about 4,410 second-feet); minimum, 1.51 feet from 3 p. m. October 5 to 3 p. m. October 6, and from 3 p. m. November 4 to 7 a. m. November 6 (discharge, 26 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent. Rating curve fairly well defined below 2,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh.

Daily Mean Gage Height, in feet, of Chartiers Creek at Carnegie, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.54	1.53	1.56	2.41	3.27	2.71	2.91	2.84	2.46	2.04	1.93	1.90
2	1.54	1.52	1.56	2.53	3.66	2.61	2.82	2.72	2.52	1.96	1.83	1.85
3	1.54	1.52	1.56	2.50	3.80	2.73	2.87	2.62	2.42	1.92	1.87	1.86
4	1.52	1.51	1.56	2.25	3.42	2.14	2.90	2.56	2.31	2.00	1.84	1.92
5	1.52	1.51	1.72	2.03	3.20	3.09	3.96	2.56	2.31	1.86	1.95	2.37
6	1.51	1.78	1.75	1.97	2.70	2.96	3.89	2.51	2.31	2.21	1.85	3.11
7	1.56	2.07	1.74	1.96	2.86	3.87	3.45	2.46	2.70	2.95	1.85	2.70
8	1.67	1.99	1.77	2.73	2.84	3.75	3.30	2.50	3.02	2.17	1.83	2.27
9	1.69	1.77	1.80	3.03	2.77	3.45	3.09	2.84	2.48	1.93	1.75	2.18
10	1.64	1.61	1.84	2.95	2.62	4.51	2.99	2.75	2.27	1.91	1.71	2.06
11	1.98	1.55	1.75	2.65	2.65	-------	2.85	2.63	2.28	2.58	1.70	1.94
12	1.83	1.53	1.70	2.49	2.95	-------	2.78	4.71	2.35	2.31	2.00	1.92
13	1.63	1.55	1.66	2.31	5.66	-------	2.97	6.78	2.27	2.21	1.90	1.88
14	1.56	1.55	1.62	2.45	4.63	-------	5.84	4.58	2.18	2.04	1.82	1.82
15	1.52	1.95	1.61	3.06	3.92	3.68	6.67	4.08	2.18	1.97	1.71	1.80
16	1.52	2.03	1.61	2.87	3.24	3.46	4.99	4.22	2.20	2.21	1.68	1.78
17	1.55	1.85	1.74	2.61	3.14	3.26	4.25	3.80	2.14	2.10	1.69	1.72
18	1.58	1.81	1.78	2.56	2.98	3.08	3.89	3.48	2.06	1.93	1.68	1.75
19	1.54	1.70	1.79	2.41	2.88	3.07	3.63	3.32	2.01	1.85	1.64	1.86
20	1.57	1.64	1.75	2.35	2.80	2.99	3.45	3.32	2.04	1.81	1.61	2.08
21	1.56	1.62	1.64	3.59	2.74	2.91	3.31	3.78	2.02	1.80	1.60	2.50
22	1.56	1.60	1.60	4.28	2.65	3.21	3.18	3.36	1.98	1.80	1.78	2.76
23	1.61	1.58	1.60	3.56	2.53	4.01	3.06	3.16	1.96	1.73	1.79	1.99
24	1.69	1.58	1.63	3.09	2.37	4.75	2.98	3.00	2.36	1.79	1.74	1.90
25	1.66	1.56	1.67	2.91	2.48	3.81	2.90	2.96	3.30	1.81	1.61	1.88
26	1.61	1.56	1.71	2.76	2.71	3.60	2.79	2.81	2.46	1.75	1.60	1.80
27	1.57	1.56	1.75	2.95	3.41	3.45	2.75	2.60	2.28	1.77	1.67	1.75
28	1.55	1.56	2.99	5.37	3.03	3.29	2.88	2.61	2.27	3.51	3.54	1.74
29	1.55	1.56	2.68	4.48	-------	3.19	3.42	2.66	2.38	2.63	3.58	1.70
30	1.53	1.56	2.19	3.62	-------	3.13	3.10	2.57	2.15	2.09	2.42	1.70
31	1.53	-------	2.11	3.34	-------	3.01	-------	2.51	-------	2.01	2.02	-------

NOTE.—Gage height Mar. 11-14 not observed.

Daily discharge, in second-feet, of Chartiers Creek at Carnegie, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	27	30	142	380	205	260	245	152	80	67	63
2	28	27	30	170	560	180	230	205	160	70	55	58
3	28	27	30	160	635	218	245	180	144	65	60	59
4	27	26	30	112	440	342	260	170	122	75	56	65
5	27	26	44	79	360	325	710	170	122	59	69	134
6	26	50	47	71	205	275	685	160	122	105	58	325
7	30	84	46	70	245	660	462	152	205	275	58	205
8	39	74	49	218	245	610	400	160	290	98	55	115
9	41	49	52	308	218	462	325	245	156	67	47	100
10	56	34	56	275	180	1,020	290	218	115	64	43	83
11	73	29	47	192	192	1,400	245	192	117	180	42	68
12	52	27	42	158	275	1,200	230	1,140	130	122	75	65
13	36	29	38	122	1,820	900	275	2,720	115	105	63	61
14	30	29	35	150	1,080	700	1,890	1,080	100	80	54	54
15	27	69	34	308	685	585	2,630	785	100	71	43	52
16	27	79	34	245	380	462	1,330	840	103	105	40	50
17	29	58	46	180	342	380	840	635	94	88	35	44
18	31	53	50	170	290	325	685	485	83	67	40	47
19	28	42	51	142	260	308	560	400	76	58	37	59
20	31	37	47	124	230	290	462	400	80	53	34	85
21	30	35	37	535	218	260	400	635	78	52	33	160
22	30	33	33	900	192	360	360	420	73	52	50	97
23	34	31	33	510	170	735	308	342	70	45	51	74
24	41	31	36	308	134	1,200	290	290	132	51	46	63
25	38	30	39	275	156	635	260	275	400	53	34	61
26	34	30	43	218	205	535	230	230	152	47	33	52
27	31	30	47	275	440	462	218	180	117	49	39	47
28	29	30	118	1,610	308	400	260	180	115	185	510	46
29	29	30	205	1,060	-------	360	440	192	136	192	400	42
30	27	30	102	535	-------	342	325	170	96	87	144	42
31	27	-------	90	420	-------	290	-------	160	-------	76	78	-------

NOTE.—Discharge Mar. 11-14 estimated, because of no gage height record, from discharge of Turtle Creek near Trafford and Raccoon Creek at Moffatt's Mill.

Monthly discharge of Chartiers Creek at Carnegie, for the year ending September 30, 1923.
(Drainage area 260 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	73	26	33.7	0.130	0.15
November	84	26	39.5	.152	.17
December	205	30	52.3	.201	.23
January	1,610	70	323	1.24	1.43
February	1,820	134	387	1.49	1.55
March	1,400	180	530	2.04	2.35
April	2,630	218	537	2.07	2.31
May	2,720	152	441	1.70	1.96
June	400	70	132	.508	.57
July	485	45	99.2	.382	.44
August	510	33	79.0	.304	.35
September	325	42	82.5	.317	.35
The Year	2,720	26	227	.873	11.86

OHIO BASIN—STATION NO. 31

SHENANGO RIVER NEAR JAMESTOWN

Location.—At two-span steel highway bridge, known as Frye Bridge, about one and one-half miles downstream from Jamestown, Mercer County.

Drainage Area.—182 sqare miles.

Records Available.—December 2, 1919, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by Hugh P. McClimans. Elevation of gage zero 955.00 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank is low and overflow begins at a stage of 7 feet; left is high and not subject to overflow. Bed is composed of gravel and boulders; Control is at a riffle about 50 feet downstream from the gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 6.05 feet observed at 5 p. m. March 13 (discharge, 1,400 second-feet); a stage of 6.85 feet was observed at 5 p. m. January 21, but the water was held back by an ice jam; minimum, 1.03 feet at 5 p. m. August 20 (discharge. 1.3 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined below 1,600 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage heights to rating table. Results fair.

Daily Mean Gage Height, in feet, of Shenango River near Jamestown, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.16	1.32	1.61	3.56	2.81	2.48	1.98	1.57	1.44	1.23	1.18	1.21
2	1.17	1.32	1.61	3.32	3.20	2.78	1.98	1.55	1.44	1.19	1.15	1.19
3	1.14	1.32	1.63	3.12	3.84	3.24	2.12	1.53	1.40	1.19	1.18	1.20
4	1.16	1.32	1.72	3.15	3.75	4.04	2.66	1.48	1.38	1.20	1.16	1 1
5	1.14	1.32	1.71	2.84	4.10	5.32	3.62	1.44	1.38	1.23	1.15	1.18
6	1.20	1.50	1.66	2.92	3.96	5.12	3.85	1.42	1.37	1.25	1.15	1.21
7	1.21	1.46	1.59	2.96	3.50	4.05	4.32	1.43	1.42	1.24	1.15	1.25
8	1.25	1.47	1.73	2.67	2.80	3.50	3.96	1.48	1.53	1.25	1.17	1.21
9	1.26	1.55	1.76	2.34	2.31	3.14	3.36	1.74	1.58	1.25	1.13	1.31
10	1.30	1.54	1.76	2.22	2.18	3.46	2.88	1.96	1.54	1.21	1.15	1.28
11	1.38	1.56	1.88	2.23	2.36	3.84	2.55	1.96	1.48	1.25	1.13	1.27
12	1.37	1.56	1.71	2.30	2.38	4.94	2.26	3.73	1.41	1.21	1.13	1. 6
13	1.37	1.52	2.10	2.40	2.80	5.95	2.24	3.62	1.36	1.21	1.09	1.22
14	1.38	1.46	2.08	2.77	2.77	5.52	2.15	3.85	1.33	1.19	1.10	1.19
15	1.35	1.64	1.96	3.91	2.60	4.31	2.14	3.76	1.32	1.23	1.11	1.17
16	1.33	1.59	1.78	3.63	2.70	4.25	2.24	3.88	1.30	1.19	1.10	1.17
17	1.32	1.64	1.68	3.39	2.58	3.98	2.12	3.66	1.29	1.21	1.09	1.15
18	1.30	1.60	1.62	3.74	2.80	3.93	2.09	3.64	1.28	1.22	1.09	1.16
19	1.31	1.62	1.59	4.28	2.67	3.65	2.06	3.58	1.28	1.19	1.07	1.23
20	1.32	1.58	1.60	4.78	2.54	3.16	2.02	3.16	1.24	1.14	1.03	1.35
21	1.30	1.53	1.62	6.56	2.29	2.86	1.94	2.68	1.26	1.14	1.09	1.33
22	1.28	1.52	1.61	6.36	2.15	3.09	1.90	2.35	1.25	1.13	1.11	1.50
23	1.33	1.51	1.64	6.03	2.06	3.34	1.86	2.14	1.25	1.11	1.11	1.39
24	1.36	1.50	1.63	5.33	2.07	3.27	1.80	2.01	1.21	1.11	1.07	1.39
25	1.30	1.49	1.69	4.14	1.99	3.28	1.75	1.95	1.22	1.11	1.07	1.35
26	1.44	1.47	1.79	3.52	2.10	3.04	1.68	1.88	1.23	1.09	1.09	1.33
27	1.46	1.48	2.10	3.06	2.97	2.75	1.63	1.79	1.21	1.09	1.10	1.29
28	1.40	1.48	3.81	3.01	2.62	2.49	1.62	1.69	1.23	1.17	1.23	1.27
29	1.34	1.53	3.49	2.97	-------	2.42	1.62	1.58	1.21	1.12	1.23	1.25
30	1.32	1.50	3.22	3.00	-------	2.18	1.62	1.52	1.19	1.15	1.22	1.23
31	1.33	-------	2.98	2.88	-------	2.05	-------	1.46	-------	1.17	1.21	-------

Note.—Stage-discharge relation Dec. 11, 13-17, 28 and 29, Jan. 4-13, 21-31, Feb. 5-12 and 18-24 affected by ice.

Daily discharge in second-feet, of Shenango River near Jamestown, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.9	14	42	510	280	213	103	38	24	7.9	5.6	6.9
2	5.2	14	42	420	390	280	103	36	24	6.0	4.6	6.0
3	4.2	14	45	360	570	390	127	33	20	6.0	5.6	6.5
4	4.9	14	58	320	570	640	246	28	18	6.5	4.9	6.0
5	4.2	14	56	260	280	1,120	510	24	18	7.9	4.6	5.6
6	6.5	30	49	240	240	1,040	570	22	18	9.0	4.6	6.9
7	6.9	26	40	220	190	640	745	23	22	8.4	4.6	9.0
8	9.0	27	60	180	170	480	640	28	33	9.0	5.2	13
9	9.5	36	64	150	140	360	450	61	39	9.0	3.9	13
10	12	34	64	120	130	480	304	88	34	6.9	4.6	11
11	18	37	55	110	120	570	224	99	28	9.0	3.9	10
12	18	37	56	130	120	900	180	540	21	6.9	3.9	9.5
13	17	37	55	170	280	1,400	158	510	17	6.9	2.7	7.4
14	18	26	55	268	268	1,200	138	570	14	6.0	3.0	6.0
15	16	47	48	605	235	745	138	570	14	7.9	3.3	5.2
16	14	40	48	510	257	710	158	605	12	6.0	3.0	5.2
17	14	47	40	450	235	640	127	540	11	6.9	2.7	4.6
18	12	41	44	540	190	605	127	510	11	7.4	2.7	4.9
19	13	44	40	745	170	510	117	480	11	6.0	2.2	7.9
20	14	39	41	920	150	390	107	390	8.4	4.2	1.3	16
21	12	33	44	1,100	130	292	96	257	9.5	4.2	2.7	14
22	11	32	42	1,000	130	360	88	180	9.0	3.9	3.3	12
23	14	31	47	750	110	420	81	138	9.0	3.3	3.3	19
24	17	30	45	480	110	420	70	107	6.9	3.3	2.2	19
25	12	29	54	280	105	420	62	98	7.4	3.3	2.2	16
26	24	27	68	260	127	330	52	84	7.9	2.7	2.7	14
27	26	28	127	220	317	268	45	68	6.9	2.7	3.0	11
28	20	28	360	190	246	213	44	54	7.9	5.2	7.9	10
29	15	33	420	170	-------	191	44	39	6.9	3.6	7.9	9.0
30	14	30	390	180	-------	148	44	32	6.0	4.6	7.4	7.9
31	14	-------	330	220	-------	117	-------	26	-------	5.2	6.9	-------

Note.—Discharge Dec. 11, 13-17, 28 and 29, Jan. 4-13, 21-31, Feb. 5-12 and 18-24 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Shenango River at Sharon and Oil Creek near Rouseville.

Monthly discharge of Shenango River near Jamestown, for the year ending September 30, 1923.
(Drainage Area 182 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	26	4.2	12.9	0.071	0.08
November	47	14	30.5	.168	.19
December	420	40	94.5	.519	.60
January	1,100	110	390	2.14	2.47
February	570	105	224	1.23	1.28
March	1,400	117	534	2.93	3.38
April	745	44	197	1.08	1.20
May	605	22	203	1.12	1.29
June	39	6.0	15.8	.087	.10
July	9.0	2.7	5.99	.033	.04
August	7.9	1.3	4.08	.022	.03
September	19	4.6	9.75	.054	.06
The Year	1,400	1.3	144	.791	10.72

OHIO BASIN—STATION NO. 32

LITTLE SHENANGO RIVER AT GREENVILLE

Location.—At single-span steel highway bridge, known as Quaker Bridge, Columbia Avenue, Greenville, Mercer County.

Drainage Area.—107 square miles.

Records Available.—January 1, 1914, to August 31, 1923, when the station was discontinued.

Gage.—Staff attached to upstream corner of right abutment; read by James R. Marks. Elevation of gage zero 944.50 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of sand and gravel. Control for low stages is a coarse gravel and boulder bar, about 300 feet downstream from gage, permanent; for high stages is a dam on the Shenango River just downstream from the mouth of Little Shenango River.

Extremes of Discharge.—Maximum stage during the period, estimated from hydrograph, 5.6 feet at 8 p. m. January 21 (discharge, 2,210 second-feet); minimum, 0.91 foot at 8. a. m. August 21 (discharge, 2.0 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 1,800 second-feet and fairly well defined between 1,800 and 2,800 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Daily Mean Gage Height, in feet, of Little Shenango River at Greenville, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.98	1.06	1.48	3.05	2.05	2.46	1.48	1.37	1.34	1.10	1.04	
2	.98	1.06	1.62	2.42	2.75	2.20	1.54	1.34	1.34	1.10	1.06	
3	.97	1.12	1.41	2.09	3.34	2.51	1.62	1.32	1.33	1.11	1.06	
4	.99	1.11	1.30	2.01	2.70	3.07	2.29	1.30	1.31	1.12	1.09	
5	1.00	1.10	1.26	1.82	2.05	3.02	3.04	1.25	1.29	1.23	1.07	
6	1.00	1.20	1.32	1.66	1.91	2.25	2.83	1.26	1.28	1.25	1.00	
7	1.00	1.19	1.36	1.63	1.85	1.97	2.23	1.27	1.43	1.18	1.09	
8	1.02	1.26	1.48	1.52	1.66	1.88	2.06	1.30	1.53	1.13	1.02	
9	1.04	1.33	1.75	1.51	1.73	1.86	1.93	1.63	1.39	1.11	.96	
10	1.07	1.33	1.50	1.55	1.86	2.17	1.78	1.63	1.40	1.11	.95	
11	1.12	1.26	1.41	1.60	1.68	3.01	1.69	1.99	1.34	1.26	.95	
12	1.20	1.23	1.39	1.60	1.54	3.39	1.62	3.80	1.27	1.15	.93	
13	1.17	1.24	1.40	1.58	2.21	3.35	1.57	3.48	1.26	1.11	.95	
14	1.15	1.26	1.33	2.10	2.48	2.54	1.59	2.30	1.25	1.10	.98	
15	1.12	1.40	1.31	3.49	2.38	2.15	1.71	2.13	1.25	1.09	.99	
16	1.08	1.50	1.30	3.38	2.35	2.42	1.87	2.89	1.24	1.11	.94	
17	1.07	1.33	1.30	2.58	2.34	2.27	1.75	2.93	1.23	1.12	.95	
18	1.10	1.32	1.29	2.39	2.22	2.11	1.63	2.18	1.22	1.10	.95	
19	1.11	1 28	1.30	2.92	1.96	2.02	1.60	1.95	1.18	1.10	.94	
20	1.10	1.24	1.27	3.12	1.83	1.86	1.53	2.03	1.16	1.10	.96	
21	1.08	1.24	1.30	4.66	1.77	1.77	1.49	2.46	1.16	1.04	.92	
22	1.06	1.18	1.29	4.05	1.76	2.04	1.51	2.15	1.14	1.05	1.04	
23	1.13	1.15	1.31	2.63	1.73	2.58	1.51	1.92	1.13	1.08	.98	
24	1.14	1.15	1.36	2.38	1.70	2.29	1.47	1.74	1.13	1.02	.98	
25	1.14	1.18	1.42	2.07	1.71	1.92	1.43	1.59	1.12	.98	.98	
26	1.11	1.18	1.52	2.04	1.89	1.82	1.41	1.51	1.14	.98	.97	
27	1.09	1.20	1.90	1.88	3.21	1.74	1.39	1.47	1.18	.98	.99	
28	1.09	1.22	3.41	2.06	2.81	1.64	1.40	1.45	1.18	1.00	1.04	
29	1.09	1.25	2.82	2.18	-------	1.56	1.40	1.43	1.13	1.02	1.19	
30	1.07	1.32	2.30	2.05	-------	1.57	1.39	1.38	1.11	.99	1.14	
31	1.06	-------	2.18	1.95	-------	1.54	-------	1.35	-------	1.05	1.06	-------

Note.—Stage-discharge relation Jan. 15-17, 21, 22, 28-30, Feb. 9-11 and 16-28 affected by ice. Station discontinued August 31, 1923.

Daily discharge, in second-feet, of Little Shenango River at Greenville, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.1	5.0	54	555	171	298	54	38	34	6.7	4.4	
2	3.1	5.0	76	279	416	212	63	34	34	6.7	5.0	
3	3.0	8.1	44	184	707	316	76	32	33	7.4	5.0	
4	3.3	7.4	29	158	394	555	244	29	30	8.1	6.2	
5	3.5	6.7	24	115	171	531	555	23	28	21	5.4	
6	3.5	17	32	83	136	228	461	24	27	23	3.5	
7	3.5	16	37	78	122	150	228	25	46	15	6.2	
8	3.9	24	54	60	83	128	171	29	62	8.9	3.9	
9	4.4	33	100	59	80	124	140	78	41	7.4	2.8	
10	5.4	33	57	65	75	198	106	78	42	7.4	2.6	
11	8.1	24	44	73	65	531	88	156	34	24	2.6	
12	17	21	41	73	63	734	76	960	25	11	2.3	
13	14	22	42	70	212	707	68	788	24	7.4	2.6	
14	11	24	33	184	316	335	71	244	23	6.7	3.1	
15	8.1	42	30	320	279	198	92	198	23	6.2	3.3	
16	5.8	57	29	320	200	279	126	484	22	7.4	2.4	
17	5.4	33	29	240	130	228	100	508	21	8.1	2.6	
18	6.7	32	28	279	110	184	78	212	19	6.7	2.6	
19	7.4	27	29	484	100	158	73	146	15	6.7	2.4	
20	6.7	22	25	580	90	124	62	171	12	6.7	2.8	
21	5.8	22	29	950	80	104	56	298	12	4.4	2.2	
22	5.0	15	28	850	65	171	59	198	10	4.7	4.4	
23	8.9	11	30	374	65	354	59	138	8.9	5.8	3.1	
24	10	11	37	279	65	244	52	98	8.9	3.9	3.1	
25	10	15	45	171	65	138	46	71	8.1	3.1	3.1	
26	7.4	15	60	171	80	115	44	59	10	3.1	3.0	
27	6.2	17	133	128	180	98	41	52	15	3.1	3.3	
28	6.2	19	734	120	400	80	42	50	15	3.5	4.4	
29	6.2	23	438	110	-------	67	42	46	8.9	3.9	16	
30	5.4	32	244	120	-------	68	41	39	7.4	3.3	10	
31	5.0	-------	212	146	-------	63	-------	36	-------	4.7	5.0	-------

Note.—Discharge Jan. 15-17, 21, 22, 28-30, Feb. 9-11 and 16-28 estimated, because of ice from weather records, study of gage height graph and comparison with similar studies for Shenango River near Jamestown, French Creek at Saegertown and Cussewago Creek near Meadville. Station discontinued Aug. 31, 1923.

Monthly discharge of Little Shenango River at Greenville, for the year ending September 30, 1923.
(Drainage area 107 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	17	3.0	6.55	0.061	0.07
November	57	5.0	21.3	.199	.22
December	734	24	91.2	.852	.98
January	950	59	248	2.32	2.68
February	707	63	176	1.64	1.71
March	734	63	249	2.33	2.69
April	555	41	114	1.07	1.19
May	960	23	172	1.61	1.86
June	62	7.4	23.3	.218	.24
July	24	3.1	7.94	.074	.09
August	16	2.2	4.17	.039	.04
September					
The Year					

Note.—Station discontinued Aug. 31, 1923.

OHIO BASIN—STATION NO. 33

PYMATUNING CREEK NEAR ORANGEVILLE

Location.—At single-span steel highway bridge, about two miles southeast of Orangeville, Mercer County.

Drainage Area.—170 square miles.

Records Available.—January 1, 1914, to August 31, 1923, when the station was discontinued.

Gage.—Standard chain attached to upstream side of bridge; read by D. S. Stecher.

Discharge Measuerements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank is high and not subject to overflow; left becomes inundated at a stage of about 5.4 feet. Bed is composed of gravel and boulders. Low-water control is at a riffle about 30 feet downstream from gage; probably permanent.

Extremes of Discharge.—Maximum stage during the period, estimated from hydrograph, 6.5 feet at 11 a. m. January 21 (discharge, about 2,050 second-feet); minimum, 0.56 foot at 7 a. m. October 5 and 6 (discharge, 2.2 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Regulation.—During low stages slight variations in gage height are caused by operation of mills.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 1,500 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for low stages which are fair, owing to probable effect of mill operation upstream from the station.

Daily Mean Gage Height, in feet, of Pymatuning Creek near Orangeville, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.59	0.70	0.89	2.64	1.92	2.16	1.62	0.87	0.82	0.65	0.82	
2	.58	.70	.95	2.42	1.90	2.27	1.54	.81	.74	.69	.82	
3	.58	.72	.84	2.30	2.02	2.38	1.73	.78	.78	.74	.82	
4	.57	.74	.92	2.08	2.02	2.92	2.00	.77	.86	.79	.82	
5	.58	.74	.81	2.00	1.94	2.95	2.16	.74	.86	.77	.78	
6	.56	.76	.92	2.19	1.95	2.77	1.95	.70	.98	.88	.77	
7	.58	.78	.84	2.10	1.98	2.68	1.85	.74	1.06	.82	.80	
8	.59	.79	.92	1.81	1.88	2.68	1.77	.78	1.20	.79	.80	
9	.61	.81	.95	1.59	1.75	2.72	1.80	.95	1.20	.78	.78	
10	.64	.80	.85	1.48	1.68	2.89	1.68	1.00	1.18	.78	.80	
11	.68	.82	.94	1.51	1.58	2.87	1.75	1.94	1.08	.82	.78	
12	.71	.80	.85	1.54	1.58	3.42	1.66	3.33	1.10	.82	.83	
13	.75	.80	.92	1.53	1.85	3.66	1.76	4.10	.95	.80	.82	
14	.73	.82	.80	1.50	2.02	4.25	1.80	3.41	.92	.78	.78	
15	.72	.80	.92	1.52	1.92	4.35	1.82	3.14	1.04	.82	.76	
16	.72	.82	.85	1.54	1.86	3.89	1.79	3.47	.91	.89	.74	
17	.76	.82	.85	1.66	1.80	3.20	1.49	3.20	.83	.84	.72	
18	.82	.83	.88	1.88	1.78	2.78	1.36	2.95	.89	.84	.70	
19	.81	.84	.89	2.16	1.76	2.59	1.12	2.84	.90	.84	.70	
20	.79	.84	.80	3.54	1.72	2.50	.92	2.82	.89	.79	.67	
21	.77	.81	.89	6.15	1.68	2.05	.90	2.98	.80	.78	.66	
22	.75	.85	.80	6.44	1.66	1.87	.95	2.95	.85	.76	.66	
23	.79	.85	.88	6.05	1.62	3.21	.96	2.27	.88	.79	.65	
24	.82	.84	.80	5.32	1.60	2.03	.97	1.88	.81	.73	.63	
25	.79	.82	.79	4.75	1.60	1.88	.92	1.36	.82	.73	.62	
26	.78	.80	.80	3.55	1.64	1.93	.91	1.05	.73	.69	.62	
27	.75	.90	.84	2.62	1.89	1.75	.95	.92	.80	.73	.65	
28	.72	.82	1.54	2.20	2.12	1.82	.92	.85	.70	.70	.62	
29	.72	.91	2.59	2.10		1.65	.94	.88	.68	.70	.62	
30	.71	.84	2.45	1.98		1.82	.90	.79	.65	.72	.62	
31	.71		2.36	1.92		1.68		.76		.77	.62	

NOTE.—Stage-discharge relation Jan. 6-9, Jan. 21 to Feb. 1 and Feb. 18-26 affected by ice. Station discontinued Aug. 31, 1923.

Daily discharge, in second-feet, of Pymatuning Creek near Orangeville, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.0	7.3	23	399	200	281	149	21	15	5.2	15	
2	2.7	7.3	31	346	243	307	138	14	9.4	6.9	15	
3	2.7	8.3	17	320	243	346	182	12	12	9.4	15	
4	2.4	9.4	27	268	243	481	243	11	20	12	15	
5	2.7	9.4	14	243	230	509	281	9.4	20	11	12	
6	2.2	10	27	190	230	453	230	7.3	35	22	11	
7	2.7	12	17	170	243	426	206	9.4	48	15	13	
8	3.0	12	27	150	218	426	182	12	71	12	13	
9	3.6	14	31	130	182	426	194	31	71	12	12	
10	4.7	13	18	124	171	481	171	38	68	12	13	
11	6.4	15	30	128	149	481	182	230	51	15	12	
12	7.8	13	18	138	149	625	160	595	54	15	16	
13	10	13	27	138	206	717	182	846	31	13	15	
14	8.8	15	13	128	243	880	194	625	27	12	12	
15	8.3	13	27	128	218	950	194	537	44	15	10	
16	8.3	15	18	138	206	781	194	655	25	23	9.4	
17	10	15	18	160	194	566	126	566	16	17	8.3	
18	15	16	16	218	170	453	100	509	23	17	7.3	
19	14	17	23	281	150	399	57	453	13	17	7.3	
20	12	17	13	655	140	372	27	453	23	12	6.0	
21	11	14	23	1,000	130	256	24	509	13	12	5.6	
22	10	18	13	950	130	206	31	509	18	10	5.6	
23	12	18	22	600	110	294	32	307	22	12	5.2	
24	15	17	13	400	110	256	34	218	14	8.8	4.3	
25	12	15	12	260	110	218	27	100	15	8.8	4.0	
26	12	13	13	220	130	230	25	46	8.8	6.9	4.0	
27	10	24	17	170	218	182	31	27	13	8.8	5.2	
28	8.3	15	138	170	268	194	27	18	7.3	7.3	4.0	
29	8.3	25	399	170		160	30	22	5.4	7.3	4.0	
30	7.8	17	359	170		194	24	12	5.2	8 3	4.0	
31	7.8		333	170		171		10		11	4.0	

Note.—Discharge Jan. 6-9, Jan. 21 to Feb. 1 and Feb. 18-26 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Shenango River near Jamestown and Little Shenango River at Greenville. Station discontinued August 31, 1923.

Monthly discharge of Pymatuning Creek near Orangeville, for the year ending September 30, 1923.
(Drainage area 170 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	15	2.2	7.89	0.046	0.05
November	24	7.3	14.3	.084	.09
December	399	12	57.3	.337	.39
January	1,000	124	282	1.66	1.91
February	268	110	187	1.10	1.14
March	950	160	410	2.41	2.78
April	281	24	123	.724	.81
May	846	7.3	239	1.41	1.63
June	71	5.2	26.6	.156	.17
July	23	5.2	12.1	.071	.08
August	16	4.0	9.26	.054	.06
September					
The Year					

Note.—Station discontinued Aug. 31, 1923.

OHIO BASIN—STATION NO. 34

SHENANGO RIVER AT SHARON

Location.—At single-span steel highway bridge, Chestnut Street, Sharon, Mercer County.

Drainage Area.—611 square miles.

Records Available.—August 1, 1909, to September 30, 1923.

Gage.—Standard chain attached to upstream side of bridge; read by Carnegie Steel Company. Elevation of gage zero 840.00 feet, United States Geological Survey datum.

Discharge Measurements.—Made from the Mill, Chestnut or State Street bridges, or by wading.

Channel and Control—Banks become inundated at a stage of about 12 feet. Bed is composed of silt and gravel. Control is a water main, backed with gravel and boulders, about one-quarter of a mile downstream from the gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 8.9 feet observed at 5 p. m. January 22 (discharge, 4,810 second-feet); minimum, 1.77 feet from 5 p. m. August 21 to 8 a. m. August 22 (discharge, 17 second-feet).

Ice.—Water from this river is used for industrial purposes and returned to the stream at sufficiently high temperature to usually prevent the formation of ice for a considerable distance downstream from the station.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 2,000 second-feet; fairly well defined between 2,000 and 5,000 second-feet and well defined between 5,000 and 9,000 second-feet. Gage read to tenths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except those for extremely low stages which are fair.

Cooperation.—Station is maintained in cooperation with Carnegie Steel Company, Farrell.

The following discharge measurement was made by C. B. McElrath: No. 112, October 3: Gage height, 1.91 feet; discharge, 16.4 second-feet. Measurement made by wading 300 feet upstream from gage.

Daily Mean Gage Height, in feet, of Shenango River at Sharon, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.9	2.1	2.35	4.19	4.1	3.95	2.9	2.4	2.3	2.0	1.9	1.9
2	1.9	2.1	2.45	5.05	4.8	3.95	2.85	2.3	2.3	2.0	2.0	1.92
3	1.9	2.1	2.55	4.41	5.65	4.35	3.0	2.3	2.35	2.0	1.95	1.95
4	2.0	2.1	2.5	4.27	5.15	5.75	3.75	2.25	2.55	2.0	2.0	2.05
5	1.95	2.1	2.5	4.07	4.65	6.3	5.6	2.3	2.4	2.0	2.00	2.05
6	1.95	2.1	2.45	3.69	4.4	6.0	5.9	2.1	2.4	2.05	1.94	2.05
7	1.9	2.15	2.4	3.35	4.15	5.5	5.4	2.15	2.7	2.1	1.90	2.05
8	1.95	2.3	2.4	3.45	4.0	4.65	5.25	2.25	3.0	2.1	1.86	2.0
9	1.9	2.25	2.65	3.3	3.65	4.35	4.95	2.35	2.6	2.0	1.86	2.0
10	1.95	2.3	2.7	3.15	3.15	4.85	4.3	2.8	2.7	2.05	1.84	2.0
11	2.0	2.3	2.55	2.95	3.0	6.05	3.8	3.1	2.45	2.1	1.86	1.9
12	2.0	2.3	2.55	3.0	2.95	6.95	3.5	5.65	2.35	2.1	1.92	1.95
13	2.1	2.25	2.4	2.95	3.8	7.4	3.3	7.0	2.25	2.0	2.00	2.0
14	2.1	2.3	2.3	3.1	4.6	7.05	3.2	5.5	2.2	2.0	1.96	1.95
15	2.0	2.35	2.3	4.8	3.8	6.2	3.2	5.1	2.2	2.05	1.88	2.0
16	2.1	2.45	2.35	5.8	3.55	6.05	3.35	5.6	2.3	2.05	1.85	1.9
17	2.05	2.55	2.3	5.7	3.45	5.9	3.5	5.8	2.2	2.0	1.83	1.95
18	2.05	2.45	2.25	5.7	3.35	5.25	3.3	5.1	2.15	2.0	1.82	1.9
19	2.1	2.35	2.25	5.7	3.1	5.0	3.15	4.45	2.2	1.95	1.83	1.9
20	2.1	2.3	2.3	5.7	2.9	4.55	3.05	4.1	2.1	1.95	1.81	2.1
21	2.05	2.4	2.2	7.5	2.8	4.05	2.95	4.7	2.05	2.0	1.79	2.6
22	2.0	2.3	2.2	8.7	2.7	4.25	2.9	4.3	2.0	1.98	1.77	2.55
23	2.1	2.3	2.2	7.85	2.65	5.1	2.8	3.7	2.0	1.89	1.80	2.45
24	2.1	2.2	2.2	6.4	2.55	4.9	2.7	3.3	2.0	1.90	1.79	2.15
25	2.1	2.2	2.2	5.6	2.55	4.65	2.6	3.05	2.0	1.90	1.79	2.1
26	2.1	2.2	2.3	4.9	2.9	4.35	2.55	2.9	2.0	1.88	1.8	2.2
27	2.1	2.1	2.4	4.4	4.2	4.0	2.5	2.75	2.0	1.83	1.8	2.1
28	2.1	2.0	3.4	4.45	4.6	3.65	2.5	2.65	2.0	1.90	1.8	2.1
29	2.1	2.2	5.05	4.6	-------	3.35	2.4	2.55	2.0	1.95	1.8	2.25
30	2.1	2.2	4.4	4.3	-------	3.1	2.4	2.45	2.0	1.9	1.9	2.1
31	2.05	-------	3.84	4.15	-------	3.0	-------	2.4	-------	1.95	1.9	-------

Note.—Stage-discharge relation Jan. 17-19 and Feb. 6-10 affected by ice.

Daily discharge, in second-feet, of Shenango River at Sharon, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	29	58	104	865	810	728	243	114	93	42	29	29
2	29	58	126	1,340	1,220	728	228	93	93	42	42	32
3	29	58	149	980	1,730	980	277	93	104	42	36	36
4	42	58	137	920	1,460	1,870	620	84	149	42	42	50
5	36	58	137	810	1,100	2,240	1,730	93	114	42	42	50
6	36	58	126	595	850	2,010	1,940	58	114	50	34	50
7	29	66	114	424	700	1,660	1,590	66	186	58	29	50
8	36	93	114	471	550	1,100	1,460	84	277	58	25	42
9	29	84	174	400	400	980	1,340	104	161	42	25	42
10	36	93	186	334	320	1,220	920	213	186	50	23	42
11	42	93	149	260	277	2,010	645	314	126	58	25	29
12	42	93	149	277	260	2,820	495	1,730	104	58	32	36
13	58	84	114	260	645	3,180	400	2,820	84	42	42	42
14	58	93	93	314	1,100	2,820	355	1,660	75	42	37	36
15	42	104	93	1,220	645	2,160	355	1,400	75	50	27	42
16	58	126	104	1,870	520	2,010	424	1,730	93	50	24	29
17	50	149	93	1,700	471	1,940	495	1,870	75	42	22	36
18	50	126	84	1,500	424	1,460	400	1,400	66	42	21	29
19	58	104	84	1,600	314	1,340	334	980	75	36	22	29
20	58	93	93	1,800	243	1,100	296	810	58	36	20	58
21	50	114	75	3,280	213	755	260	1,160	50	42	18	161
22	42	93	75	4,570	186	865	243	920	42	39	17	149
23	58	93	75	3,580	174	1,400	213	595	42	28	19	126
24	58	75	75	2,320	149	1,280	186	400	42	29	18	66
25	58	75	75	1,730	149	1,100	161	296	42	29	18	58
26	58	75	93	1,280	243	980	149	243	42	27	19	75
27	58	58	114	980	865	755	137	200	42	22	19	58
28	58	42	447	980	1,100	570	137	174	42	19	19	58
29	58	75	1,340	1,100	-------	424	114	149	42	36	19	84
30	58	75	980	920	-------	314	114	126	42	29	29	58
31	50	-------	672	865	-------	277	-------	114	-------	36	29	-------

Note.—Discharge Jan. 17-19 and Feb. 6-10 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Shenango River near Jamestown and at New Castle, French Creek at Carlton and Chartiers Creek at Carnegie.

Monthly discharge of Shenango River at Sharon, for the year ending September 30, 1923.
(Drainage area 611 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	58	29	46.9	0.077	0.09
November	149	42	84.1	.138	.15
December	1,340	75	208	.340	.39
January	4,570	260	1,280	2.09	2.41
February	1,730	149	611	1.00	1.04
March	3,180	277	1,390	2.27	2.62
April	1,940	114	542	.887	.99
May	2,820	58	648	1.06	1.22
June	277	42	91.2	.149	.17
July	58	22	41.0	.067	.08
August	42	17	26.5	.043	.05
September	161	29	56.1	.092	.10
The Year	4,570	17	419	.686	9.31

OHIO BASIN—STATION NO. 35

SHENANGO RIVER AT NEW CASTLE

Location.—At two-span steel highway bridge, West Washington Street, New Castle, Lawrence County.

Drainage Area.—797 square miles.

Records Available.—January 1, 1910, to September 30, 1923.

Gage.—Standard chain attached to upstream side of bridge; read by J. L. Moseley. Elevation of gage zero 787.00 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of gravel and rock. Control is at a riffle, at the head of a low island, about 300 feet downstream from gage; practically permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 6.5 feet at 1 a. m. January 22 (discharge, 5,020 second-feet); minimum, 0.58 foot at 8 a. m. August 22 (discharge, 15 second-feet).

Ice.—Stage-discharge relation seldom affected by ice.

Diversions.—Water supply for the City of New Castle is taken from the river about one and one-half miles upstream from the gage.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of Shenango River at New Castle, during the year ending September 30, 1923.

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.ft.
41	Oct. 3a	C. B. McElrath	0.79	24.8
42	5b	do	.98	40.7
43	5b	do	.97	36.0

a Measurement made by wading ½ mile above gage.
b Measurement made by wading 1¼ miles above gage.

Daily Mean Gage Height, in feet, of Shenango River at New Castle, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.69	0.96	1.18	2.78	2.81	2.91	1.90	1.43	1.34	0.91	0.91	0.74
2	.70	.93	1.22	3.47	3.16	2.59	1.88	1.37	1.34	.83	1.01	.63
3	.74	.98	1.18	3.12	3.53	2.69	1.87	1.30	1.24	.91	1.09	.65
4	.80	.83	1.35	2.42	4.08	3.74	2.12	1.25	1.24	.98	1.10	.61
5	.87	.95	1.36	2.75	3.48	4.69	3.55	1.27	1.41	.93	1.06	.66
6	.80	.85	1.37	2.59	3.10	4.49	4.55	1.26	1.52	.96	.94	.93
7	.97	1.12	1.37	2.32	2.85	4.11	4.18	1.20	1.56	1.04	.89	1.04
8	.75	1.16	1.50	2.28	2.62	3.59	4.07	1.17	1.88	.92	1.02	.94
9	.68	1.17	1.48	2.16	2.44	3.12	3.65	1.31	1.94	.89	.80	.91
10	.82	1.21	1.46	2.07	2.29	3.13	3.07	1.48	1.82	1.03	.73	.83
11	.68	1.20	1.59	1.98	2.04	4.68	2.69	1.77	1.52	1.01	.75	.94
12	1.02	1.23	1.48	1.91	1.93	5.32	2.42	4.12	1.34	1.12	.73	.92
13	1.01	1.22	1.44	1.83	2.48	5.71	2.20	5.98	1.31	1.03	.80	.94
14	.96	1.10	1.34	2.13	3.42	5.47	2.09	4.79	1.24	1.01	.95	.76
15	1.06	1.26	1.34	3.56	3.25	4.70	2.05	3.77	1.26	1.04	.99	.74
16	.74	1.36	1.32	4.25	3.26	4.43	2.25	3.99	1.22	.94	.98	.75
17	.88	1.40	1.28	3.83	3.32	4.56	2.39	4.37	1.13	.98	.79	.72
18	1.04	1.44	1.25	3.31	2.38	3.93	2.25	4.11	1.14	1.01	.72	.66
19	1.02	1.35	1.18	3.95	2.05	3.68	2.16	3.95	1.15	.87	.70	.77
20	.96	1.41	1.14	4.34	1.96	3.30	1.98	3.29	1.06	.88	.64	.93
21	.95	1.23	1.12	5.63	1.85	2.96	1.95	3.22	1.01	.90	.62	1.12
22	1.06	1.27	1.20	6.40	1.66	2.93	1.81	3.31	.97	.88	.59	1.32
23	.90	1.21	1.31	6.29	1.62	3.79	1.76	2.85	.94	.79	.64	1.33
24	.99	1.18	1.21	5.42	1.49	3.88	1.73	2.30	.93	.81	.64	1.26
25	1.08	1.15	1.21	4.30	1.46	3.40	1.65	1.96	.87	.77	.65	1.17
26	1.04	1.16	1.23	3.49	1.58	3.13	1.54	1.81	.88	.73	.62	.97
27	1.07	1.10	1.36	3.21	2.54	2.90	1.45	1.79	.92	.66	.60	.97
28	1.00	1.17	1.71	3.16	3.16	2.60	1.50	1.66	.93	.87	.71	.99
29	1.00	1.14	3.13	3.53	-------	2.33	1.48	1.56	.94	1.04	.80	.95
30	.75	1.18	3.23	3.22	-------	2.16	1.48	1.48	.91	.80	.78	.97
31	1.01	-------	2.67	2.86	-------	2.04	-------	1.36	-------	.77	.75	-------

Note.—Stage-discharge relation Feb. 15-18 affected by ice.

Daily discharge, in second-feet, of Shenango River at New Castle, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	18	34	66	900	900	970	342	143	112	29	29	20
2	18	31	76	1,440	1,200	760	333	122	112	24	39	16
3	20	36	66	1,120	1,440	830	328	98	81	29	50	17
4	22	24	115	625	1,990	1,620	443	84	81	36	51	16
5	26	33	118	865	1,440	2,620	1,530	90	136	31	46	17
6	22	25	122	760	1,120	2,400	2,510	87	178	34	32	31
7	35	55	122	560	935	1,990	2,090	70	194	43	27	42
8	20	62	170	560	760	1,530	1,990	64	333	30	41	32
9	17	64	162	472	658	1,120	1,530	101	361	27	22	29
10	23	73	155	416	560	1,120	1,120	162	305	42	19	24
11	17	70	206	380	416	2,620	830	283	178	39	20	32
12	41	78	162	347	356	3,340	625	1,990	112	55	19	30
13	39	76	147	310	690	3,860	500	4,280	101	42	22	32
14	34	51	112	472	1,360	3,600	443	2,730	81	39	33	20
15	46	87	112	1,530	1,200	2,620	416	1,710	87	43	37	20
16	20	118	105	2,090	900	2,290	530	1,890	76	32	36	19
17	27	132	92	1,710	700	2,510	625	2,290	57	36	22	19
18	43	147	84	1,280	550	1,800	530	1,990	59	39	19	17
19	41	115	66	1,890	416	1,620	472	1,800	60	26	18	21
20	34	136	59	2,190	371	1,280	380	1,280	46	27	16	31
21	33	78	55	3,730	319	1,000	366	1,200	39	28	16	55
22	46	90	70	4,860	235	1,000	301	1,280	35	27	15	105
23	28	73	101	4,710	218	1,710	278	935	32	22	16	108
24	37	66	73	3,470	166	1,800	265	560	31	23	16	87
25	48	60	73	2,190	155	1,360	231	371	26	21	17	64
26	43	62	78	1,440	202	1,120	186	301	27	19	16	35
27	47	51	118	1,200	725	970	151	292	30	17	15	35
28	38	64	256	1,200	1,200	760	170	235	31	26	18	37
29	38	59	1,120	1,440	-------	592	162	194	32	43	22	33
30	20	66	1,200	1,200	-------	472	162	162	29	22	21	35
31	39	-------	796	935	-------	416	-------	118	-------	21	20	-------

Note.—Discharge does not include the water diverted from the stream at the New Castle Water Works. Discharge Feb. 15-18 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Shenango River at Sharon.

Monthly discharge of Shenango River at New Castle, for the year ending September 30, 1923.
(Drainage area 797 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	48	17	31.6	0.047	0.05
November	147	24	70.5	.096	.11
December	1,200	55	202	.261	.30
January	4,860	310	1,490	1.88	2.17
February	1,990	155	756	.957	1.00
March	3,860	416	1,670	2.10	2.42
April	2,510	151	661	.838	.94
May	4,280	64	871	1.10	1.27
June	361	26	102	.137	.15
July	55	17	31.4	.047	.05
August	51	15	25.5	.040	.05
September	108	16	36.0	.053	.06
The Year	4,860	15	497	.631	8.57

Note.—Discharge does not include the water diverted from the stream at the New Castle Water Works. Run-off includes the quantity of water diverted.

OHIO BASIN—STATION NO. 36

NESHANNOCK CREEK AT EASTBROOK STATION

Location.—At single-span wooden highway bridge, Pennsylvania Railroad station, Eastbrook, Lawrence County.

Drainage Area.—235 square miles.

Records Available.—January 19, 1914, to August 31, 1923, when the station was discontinued.

Gage.—Standard chain attached to upstream side of bridge; read by J. L. Garner. Elevation of gage zero 877.53 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and rock. Control is at a riffle about 500 feet downstream from gage; practically permanent.

Extremes of Discharge.—Maximum during the period was on May 12, estimated from discharge of Slippery Rock Creek at Wurtemburg and Little Shenango River at Greenville (discharge, 2,400 second-feet); a stage of 6.2 feet, estimated from hydrograph, was

reached at noon January 21, but the water was held back by an ice jam; minimum, 0.56 foot at 5.30 p. m. August 25 (discharge, 9.8 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined between 20 and 2,500 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Discharge measurements of Neshannock Creek at Eastbrook Station, during the year ending September 30, 1923.

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.ft.
28	Oct. 3a	O. B. McElrath	0.94	29.9
29	4b	do	.84	23.9

a Measurement made by wading at gage.
b Measurement made by wading 15 feet downstream from gage.

Daily Mean Gage Height, in feet, of Neshannock Creek at Eastbrook Station, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.76	0.82	1.23	-------	-------	-------	1.84	1.21	1.27	0.76	1.01	-------
2	.83	.81	1.23	-------	-------	-------	1.91	1.22	1.21	.70	1.02	-------
3	.88	.87	1.26	1.88	-------	-------	1.90	1.14	1.25	.83	1.15	-------
4	.87	.92	1.28	1.76	-------	2.43	1.81	1.14	1.27	.91	1.06	-------
5	.84	.96	1.24	1.49	-------	-------	2.14	1.17	1.31	1.14	1.05	-------
6	.84	1.01	1.13	1.41	2.05	-------	2.18	1.15	1.44	1.19	1.02	-------
7	.82	1.21	1.19	1.24	2.26	-------	2.06	1.19	1.55	1.01	1.01	-------
8	.85	1.22	1.26	1.26	2.51	-------	1.88	1.24	1.59	1.01	1.05	-------
9	.93	1.21	1.26	1.32	2.60	-------	1.73	1.29	1.54	.91	1.21	-------
10	.91	1.21	1.21	1.45	2.62	-------	1.64	1.67	1.51	.89	1.22	-------
11	1.02	1.17	1.16	1.56	2.57	-------	1.65	-------	1.47	.87	1.14	-------
12	1.01	1.24	1.12	1.86	2.69	-------	1.59	-------	1.35	.91	1.11	-------
13	.91	1.84	1.04	2.15	2.79	-------	1.49	-------	1.29	.89	1.19	-------
14	.86	2.08	1.01	-------	2.43	-------	1.51	3.05	1.21	.84	1.14	-------
15	.91	1.75	.97	-------	2.02	-------	1.49	2.85	1.22	.89	1.01	-------
16	.94	1.95	.99	-------	2.00	2.45	1.59	2.71	1.21	.85	1.00	-------
17	.93	1.91	1.01	-------	1.88	-------	1.53	2.66	1.21	.86	.97	-------
18	.94	1.41	1.01	-------	2.05	-------	1.44	-------	1.22	.75	.94	-------
19	.91	1.45	1.01	-------	2.26	-------	1.49	-------	1.22	.72	.81	-------
20	.95	1.54	1.07	2.57	2.21	-------	1.51	-------	1.19	.61	.83	-------
21	.91	1.42	1.16	5.20	2.29	-------	1.44	-------	1.21	.83	.81	-------
22	.93	1.22	1.22	3.86	2.25	-------	1.43	-------	1.17	.85	.83	-------
23	.95	1.22	1.21	3.25	2.30	-------	1.41	-------	1.21	.86	.77	-------
24	.96	1.01	1.21	2.98	2.30	-------	1.46	1.83	1.25	.88	.76	-------
25	.98	1.01	1.24	2.74	2.54	-------	1.35	1.72	1.21	.96	.62	-------
26	.94	.94	1.31	2.70	3.08	-------	1.37	1.61	1.23	1.01	.71	-------
27	.93	1.01	1.45	2.65	2.71	-------	1.34	1.52	.95	.99	.74	-------
28	.94	1.15	-------	2.59	2.64	1.96	1.39	1.52	.69	1.01	.79	-------
29	.99	1.25	-------	2.36	-------	1.88	1.29	1.40	.85	1.01	1.30	-------
30	.96	1.29	-------	1.99	-------	1.86	1.25	1.35	.71	1.00	.93	-------
31	.87	-------	-------	1.86	-------	1.94	-------	1.29	-------	.97	.83	-------

Note.—Gage height Dec. 28 to Jan. 2, Jan. 14-19, Feb. 1-5, Mar. 1-3, 5-15, 17-27, May 11-13, and 18-23 unsatisfactory. Stage-discharge relation Jan. 21, 26-30, Feb. 6-12 and 17-27 affected by ice. Station discontinued Aug. 31, 1923.

Daily discharge, in second-feet, of Neshannock Creek at Eastbrook Station, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	18	21	64	340	360	600	236	61	70	18	36	-------
2	22	21	64	480	600	300	265	62	61	15	37	-------
3	26	25	69	252	800	300	260	51	67	22	52	-------
4	25	29	72	206	600	560	224	51	70	28	42	-------
5	23	32	65	118	360	800	388	55	77	51	40	-------
6	23	36	50	98	260	650	415	52	105	58	37	-------
7	21	61	58	65	220	340	335	58	135	36	36	-------
8	24	62	69	69	180	280	252	65	147	36	40	-------
9	29	61	69	79	170	260	196	73	132	28	61	-------
10	28	61	61	108	170	420	164	174	123	26	62	-------
11	37	55	54	138	220	1,200	168	340	112	25	51	-------
12	36	65	49	244	550	1,400	147	2,200	85	28	47	-------
13	28	236	39	388	805	1,200	118	1,700	73	26	58	-------
14	24	360	36	900	560	900	123	1,020	61	23	51	-------
15	28	202	33	1,200	310	650	118	845	62	26	36	-------
16	30	285	34	1,200	260	560	147	725	61	24	35	-------
17	29	265	36	650	240	500	129	690	61	24	33	-------
18	30	98	36	600	220	420	105	600	62	18	30	-------
19	28	108	36	650	200	360	118	420	62	16	21	-------
20	31	132	43	622	180	240	123	480	58	11	22	-------
21	28	100	54	2,000	170	180	105	480	61	22	21	-------
22	29	62	62	1,850	150	360	102	440	55	24	22	-------
23	31	62	61	1,200	150	800	98	300	61	24	18	-------
24	32	36	61	970	140	750	110	232	67	26	18	-------
25	33	36	65	765	150	480	85	192	61	32	12	-------
26	30	30	77	480	220	420	89	154	64	36	16	-------
27	29	36	108	360	360	300	83	126	31	34	17	-------
28	30	52	220	300	690	290	93	126	15	36	20	-------
29	34	67	1,100	280	-------	252	73	95	24	36	75	-------
30	32	73	650	260	-------	244	67	85	16	35	29	-------
31	25	-------	480	244	-------	280	-------	73	-------	33	22	-------

Note.—Discharge Dec. 28 to Jan. 2, Jan. 14-19, Feb. 1-5, Mar. 1-3, 5-15, 17-27, May 11-13 and 18-23 estimated, because of unsatisfactory gage height record, from discharge of Little Shenango River at Greenville, Shenango River at Sharon, Slippery Rock Creek at Wurtemburg and Connoquenessing Creek near Hazen. Discharge Jan. 21, 26-30, Feb. 6-12 and 17-27 estimated, because of ice, from weather records, study of gage height graph and comparison with simflar studies for Little Shenango River at Greenville, Shenango River at Sharon, Slippery Rock Creek at Wurtemburg and Connequenessing Creek near Hazen. Station discontinued Aug. 31, 1923.

Monthly discharge of Neshannock Creek at Eastbrook Station, for the year ending September 30, 1923.

(Drainage area 235 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	37	18	28.2	0.120	0.14
November	360	21	92.3	.393	.44
December	1,100	33	128	.545	.63
January	2,000	65	552	2.35	2.71
February	805	140	332	1.41	1.47
March	1,400	180	526	2.24	2.58
April	415	67	165	.702	.78
May	2,200	51	388	1.65	1.90
June	147	15	71.3	.303	.34
July	58	11	28.3	.120	.14
August	75	12	35.4	.151	.17
September	-------	-------	-------	-------	-------
The Year	-------	-------	-------	-------	-------

Note.—Station discontinued Aug. 31, 1923.

OHIO BASIN—STATION NO. 37

CONNOQUENESSING CREEK NEAR HAZEN

Location.—At single-span steel highway bridge, about one-half mile south of Baltimore & Ohio Railroad station at Hazen, Beaver County.

Drainage Area.—355 square miles.

Records Available.—June 3, 1915, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read by Ezra Hazen.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank becomes inundated at a stage of about 10 feet; left is high and not subject to overflow. Bed is composed of gravel and boulders. Control is a deposit of gravel on ledge about 250 feet downstream from gage; permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 13.2 feet at 2 a. m. May 13 (discharge, about 10,000 second-feet); minimum, 1.10 feet at 8 a. m. October 6 and 5 p. m. October 7 (discharge, 9.0 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined to 5,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except during estimated periods, when they are fair.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh.

The following discharge measurement was made by C. B. McElrath: No. 24, October 4; Gage height, 1.11 feet; discharge, 11.4 second-feet.

Measurement made by wading 200 feet downstream from gage.

Daily Mean Gage Height, in feet, of Connoquenessing Creek near Hazen, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.14	1.14	1.38	2.44	2.82	-------	2.63	1.82	1.68	1.45	1.43	1.31
2	1.14	1.16	1.53	2.36	3.20	-------	2.49	1.82	1.70	1.45	1.35	1.23
3	1.14	1.13	1.60	2.31	4.09	-------	2.32	1.80	1.67	1.43	1.27	1.22
4	1.13	1.14	1.60	2.42	4.16	-------	2.31	1.79	1.68	1.43	1.27	1.23
5	1.12	1.18	1.62	2.42	4.23	-------	2.98	1.76	1.64	1.45	1.26	1.25
6	1.10	1.29	1.60	2.37	-------	-------	3.05	1.71	1.62	1.45	1.25	1.25
7	1.11	1.26	1.62	1.99	-------	-------	2.62	1.72	1.66	1.45	1.23	1.20
8	1.16	1.26	1.84	1.95	4.65	-------	2.21	1.78	2.64	1.41	1.25	1.20
9	1.22	1.22	1.90	1.86	4.67	-------	2.19	2.01	2.92	1.44	1.25	1.20
10	1.19	1.22	1.88	1.80	4.64	-------	2.15	2.16	2.84	1.41	1.23	1.22
11	1.26	1.20	1.72	2.65	4.65	-------	2.10	2.51	2.53	1.38	1.24	1.20
12	1.22	1.26	1.66	3.02	4.54	-------	2.12	7.18	2.06	1.39	1.25	1.19
13	1.28	1.30	1.57	3.29	4.43	-------	2.25	10.86	2.06	1.39	1.31	1.20
14	1.24	1.32	1.55	4.01	4.44	-------	2.39	5.95	3.33	1.43	1.38	1.21
15	1.23	1.38	1.51	4.05	4.34	-------	2.35	3.88	2.77	1.47	1.29	1.20
16	1.18	1.46	1.50	3.82	4.27	-------	2.22	3.20	2.05	1.43	1.25	1.20
17	1.16	1.45	1.48	3.90	4.18	-------	2.25	2.82	1.93	1.41	1.23	1.22
18	1.20	1.44	1.49	5.22	4.10	-------	2.22	2.72	1.90	1.41	1.23	1.22
19	1.17	1.44	1.45	5.48	3.93	2.59	2.20	2.48	1.86	1.39	-------	1.28
20	1.14	1.41	1.46	4.88	3.89	2.46	2.18	2.32	1.80	1.39	-------	1.44
21	1.15	1.40	1.48	6.00	3.83	2.33	2.18	2.24	1.75	1.39	-------	1.70
22	1.16	1.36	1.48	5.98	3.69	-------	2.15	2.16	1.78	1.41	-------	1.60
23	1.14	1.35	1.52	4.36	3.62	-------	2.12	2.02	1.78	1.39	-------	1.48
24	1.15	1.31	1.50	3.87	3.54	-------	2.06	1.92	1.78	1.48	1.23	1.37
25	1.16	1.30	1.49	3.73	3.53	-------	2.04	1.87	2.33	1.53	1.23	1.34
26	1.14	1.28	1.52	2.82	3.51	-------	1.95	1.82	2.17	1.63	1.23	1.30
27	1.14	1.30	1.66	2.64	3.91	-------	1.92	1.76	1.99	1.79	1.25	1.30
28	1.16	1.27	3.18	2.58	4.57	-------	1.91	1.72	1.85	1.81	1.32	1.34
29	1.14	1.30	3.91	2.86	-------	2.25	1.84	1.72	1.73	1.65	1.49	1.30
30	1.13	1.30	2.99	2.90	-------	2.29	1.84	1.72	1.60	1.48	1.52	1.28
31	1.14	-------	2.53	2.76	-------	2.21	-------	1.70	-------	1.45	1.41	-------

Note.—Stage-discharge relation Jan. 18, 19 and Jan. 31 to Feb. 28 affected by ice. Gage height Mar. 1-18, 22-28 unsatisfactory and Aug. 19-23 not observed.

Daily discharge, in second-feet, of Connoquenessing Creek near Hazen, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	11	26	392	480	600	515	119	78	35	32	20
2	11	11	47	350	750	380	420	119	83	35	24	15
3	11	9.9	60	325	1,300	480	330	112	76	32	17	14
4	9.9	11	60	381	1,200	800	325	109	78	32	17	15
5	9.6	12	65	381	750	1,100	735	100	69	35	17	16
6	9.0	18	60	355	480	850	770	86	65	35	16	16
7	9.3	17	65	181	420	750	485	89	74	35	15	13
8	11	17	126	166	340	550	277	106	515	29	16	13
9	14	14	146	132	300	420	268	189	670	34	16	13
10	13	14	139	112	280	400	250	254	637	29	15	14
11	17	13	89	515	320	850	227	425	455	26	15	13
12	14	17	74	735	420	1,500	286	4,280	210	27	16	13
13	18	19	55	950	750	1,300	296	7,800	210	27	20	13
14	15	21	51	1,500	900	1,200	365	3,200	987	32	26	14
15	15	26	44	1,500	480	1,000	345	1,420	575	38	18	13
16	12	36	42	1,340	320	800	330	875	206	32	16	13
17	11	35	39	1,420	300	700	296	605	158	29	15	14
18	13	34	41	1,700	280	600	282	545	146	29	15	14
19	12	34	35	1,800	260	485	272	414	132	27	19	18
20	11	29	36	2,220	260	403	263	330	112	27	19	34
21	11	28	39	3,200	220	335	263	291	98	27	19	83
22	11	24	39	3,200	220	550	250	254	106	29	19	60
23	11	24	46	1,820	220	1,300	236	193	106	27	19	39
24	11	20	42	1,420	220	1,300	210	154	106	39	15	25
25	11	19	41	1,260	280	1,000	202	136	335	47	15	23
26	11	18	46	605	420	750	166	119	258	67	15	19
27	11	19	74	515	900	500	154	100	181	109	16	19
28	11	17	875	485	1,000	380	150	89	129	115	21	23
29	11	19	1,420	637	-------	296	126	89	92	72	41	19
30	9.9	19	735	670	-------	315	126	89	60	39	46	18
31	11	-------	455	380	-------	277	-------	83	-------	35	29	-------

Note.—Discharge estimated Jan. 18, 19, Jan. 31 to Feb. 28, because of ice; Mar. 1-18, 22-28, because of unsatisfactory gage height record, and Aug. 19-23, because of no gage height record, from weather records, study of gage height graph and comparison with similar studies for Neshannock Creek at Eastbrook Station, Slippery Rock Creek at Wurtemburg and Chartiers Creek at Carnegie.

Monthly discharge of Connoquenessing Creek near Hazen, for the year ending September 30, 1923.
(Drainage area 355 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	18	9.0	11.8	0.033	0.04
November	36	9.9	20.2	.057	.06
December	1,420	26	165	.465	.54
January	3,200	112	989	2.79	3.22
February	1,300	220	502	1.41	1.47
March	1,500	277	715	2.01	2.32
April	770	126	306	.862	.96
May	7,800	83	735	2.07	2.39
June	987	60	234	.659	.74
July	115	26	39.7	.112	.13
August	46	15	20.0	.056	.06
September	83	13	21.2	.060	.07
The Year	7,800	9.0	313	.882	12.00

OHIO BASIN—STATION NO. 38

SLIPPERY ROCK CREEK AT WURTEMBURG

Location.—At three-span steel highway bridge, Wurtemburg, Lawrence County, about one half mile downstream from the former gaging station, and about one mile upstream from the mouth of creek.

Drainage Area.—404 square miles.

Records Available.—January 1, 1912, to September 30, 1922, for station one and a half miles upstream from mouth, and October 1, 1922, to September 30, 1923, for station one mile upstream from the mouth of creek.

Gage.—Standard chain attached to upstream side of bridge; read by Miss Grace Barton Wright. Elevation of gage zero 812.48 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—The right bank is high and not subject to overflow; the left becomes inundated at a stage of about 7.0 feet, and the stream overflows about 75 feet of the highway. Bed is composed of gravel and rocks; not subject to change. Low-water control is at a riffle, where the bed is composed of gravel and boulders, about 200 feet downstream from the gage; probably permanent. There is a decided change in the profile of stream at a

riffle, where the bed is composed of boulders and rock, about 1,000 feet downstream from the gage.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 8.4 feet at 2 a. m. May 13 (discharge, about 8,760 second-feet); minimum, 2.00 feet at 8.30 a. m. October 6 (discharge, 26 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 1,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for intermediate and high stages, when they are probably fair.

The following discharge measurement was made by C. B. McElrath: No. 43, October 4: Gage height, 2.06 feet; discharge, 37.9 second-feet. Measurement made by wading 150 feet downstream from gage.

Daily Mean Gage, in feet, of Slippery Rock Creek at Wurtembung, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.04	2.22	2.45	3.45	3.24	3.85	2.82	2.57	2.44	2.25	2.52	2.27
2	2.02	2.14	2.50	3.80	4.01	3.45	2.78	2.53	2.39	2.18	2.42	2.18
3	2.02	2.31	2.64	3.47	4.50	3.90	2.83	2.49	2.43	2.23	2.32	2.27
4	2.03	2.23	2.51	3.18	4.42	4.46	3.10	2.37	2.41	2.39	2.48	2.16
5	2.02	2.22	2.46	3.03	3.55	4.55	3.82	2.28	2.34	2.41	2.44	2.22
6	2.02	2.51	2.44	2.84	3.42	4.15	3.92	2.36	2.45	2.43	2.42	2.34
7	2.06	2.49	2.48	2.78	3.45	3.87	3.46	2.39	3.57	2.65	2.34	2.22
8	2.10	2.46	2.66	2.79	3.34	3.62	3.20	2.47	3.52	2.52	2.31	2.15
9	2.20	2.44	3.45	2.79	-------	3.46	3.20	2.77	3.07	2.37	2.32	2.26
10	2.34	2.42	3.14	2.84	-------	4.31	3.19	2.85	2.77	2.31	2.22	2.17
11	2.36	2.36	2.66	2.74	2.90	5.15	3.06	2.93	2.59	2.29	2.20	2.09
12	2.34	2.36	2.55	2.83	3.19	5.37	2.84	5.99	2.53	2.45	2.18	2.10
13	2.34	2.37	2.56	2.75	3.44	5.20	2.80	7.30	2.46	2.46	2.25	2.17
14	2.31	2.41	2.54	3.31	3.85	4.65	2.88	4.73	2.43	2.37	2.14	2.08
15	2.34	2.50	2.52	5.05	3.38	4.16	2.95	4.54	2.61	2.31	2.18	2.08
16	2.35	2.56	2.49	5.08	3.10	4.00	3.05	4.37	2.52	2.38	2.30	2.07
17	2.34	2.64	2.41	4.22	3.06	4.39	3.27	4.22	2.36	2.32	2.14	2.07
18	2.32	2.46	2.45	4.10	3.00	3.64	3.05	4.05	2.33	2.32	2.17	2.08
19	2.20	2.41	2.52	4.58	3.00	3.49	2.88	3.67	2.31	2.31	2.15	2.19
20	2.20	2.34	2.52	4.48	3.02	3.18	2.70	3.80	2.29	2.23	2.11	2.53
21	2.30	2.34	2.52	6.97	3.02	3.16	2.68	3.80	2.07	2.24	2.11	2.62
22	2.30	2.37	2.50	6.68	-------	3.50	2.78	3.67	2.17	2.17	2.13	3.12
23	2.31	2.38	2.52	5.03	-------	4.52	2.69	3.25	2.16	2.15	2.13	2.61
24	2.40	2.26	2.52	4.22	-------	4.42	2.67	2.99	2.29	-------	2.14	2.40
25	2.39	2.23	2.52	3.65	3.09	3.87	2.61	2.81	2.25	2.19	2.07	2.27
26	2.34	2.23	2.52	3.40	4.43	3.65	2.61	2.74	2.21	2.18	2.12	2.31
27	2.37	2.32	2.62	3.22	4.42	3.35	2.61	2.63	2.26	2.14	2.29	2.29
28	2.35	2.30	4.22	4.05	4.35	3.17	2.55	2.58	2.32	2.29	2.22	2.20
29	2.32	2.40	5.00	3.42	-------	3.01	2.63	2.51	2.28	2.45	2.18	2.18
30	2.28	2.39	4.20	3.31	-------	2.92	2.61	2.54	2.31	2.50	2.34	2.21
31	2.26	-------	3.90	3.24	-------	2.99	-------	2.49	-------	2.45	2.34	-------

Note.—Stage-discharge relation Dec. 13-26 and Feb. 19-28 affected by ice. Gage height Feb. 9 and 10 not observed and July 24 unsatisfactory.

Daily discharge, in second-feet, of Slippery Rock Creek at Wurtemburg, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33	68	126	572	454	845	254	163	124	74	147	79
2	29	51	141	810	960	572	238	151	109	59	118	59
3	29	89	187	572	1,400	880	258	138	121	70	91	79
4	31	70	144	428	1,310	1,400	378	104	115	109	135	55
5	29	68	129	354	636	1,500	810	81	96	115	124	68
6	29	144	124	262	540	1,130	880	102	126	121	118	96
7	36	138	135	238	572	845	572	109	636	190	96	68
8	43	129	194	242	510	670	428	132	603	147	89	53
9	63	124	572	242	420	572	428	235	354	104	91	77
10	96	118	403	262	340	1,220	428	266	235	89	68	57
11	102	102	194	223	287	2,180	354	300	170	84	63	41
12	96	102	157	258	428	2,450	262	3,260	151	126	59	43
13	96	104	110	227	572	2,180	246	5,940	129	129	74	57
14	89	115	85	481	845	1,500	279	1,610	121	104	51	40
15	96	141	75	1,940	540	1,130	309	1,400	176	39	59	30
16	99	160	65	2,060	378	960	354	1,310	147	107	86	38
17	96	187	65	1,130	354	1,310	454	1,130	102	91	51	38
18	91	129	65	1,040	331	705	354	960	94	91	57	40
19	63	115	65	1,500	280	603	279	705	89	89	53	61
20	63	96	65	1,400	260	428	208	810	84	70	45	151
21	86	96	65	5,260	240	403	201	810	38	72	45	180
22	86	104	65	4,620	240	603	238	705	57	57	49	378
23	89	107	65	1,940	220	1,400	204	454	55	53	49	176
24	112	77	65	1,130	240	1,310	198	327	84	65	51	112
25	109	70	65	705	260	845	176	250	74	61	38	79
26	96	70	85	540	340	705	176	223	65	59	47	89
27	104	91	180	428	800	510	176	184	77	51	84	63
28	99	86	1,130	960	1,100	403	157	167	91	84	68	63
29	91	112	1,940	540	-------	331	184	144	81	126	59	59
30	81	109	1,130	481	-------	296	176	154	89	141	96	65
31	77	-------	880	454	-------	327	-------	138	-------	126	96	-------

Note.—Discharge Dec. 13-26 and Feb. 19-28 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Shenango River at Sharon, Neshannock Creek at Eastbrook Station, Connoquenessing Creek near Hazen and Crooked Creek at Hileman's Farm. Discharge interpolated Feb. 9 and 10, because of no gage height record, and July 24, because of unsatisfactory gage height record.

Monthly discharge of Slippery Rock Creek at Wurtemburg, for the year ending September 30, 1923.

(Drainage area 404 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	112	29	75.5	0.187	0.22
November	187	51	106	.262	.29
December	1,940	65	283	.700	.81
January	5,260	223	1,010	2.50	2.88
February	1,400	220	531	1.31	1.36
March	2,450	296	975	2.41	2.78
April	880	157	322	.797	.89
May	5,940	81	728	1.80	2.08
June	636	38	150	.371	.41
July	190	51	95.3	.236	.27
August	147	38	76.0	.188	.22
September	378	38	83.5	.207	.23
The Year	5,940	29	370	.916	12.44

OHIO BASIN—STATION NO. 39

RACCOON CREEK AT MOFFATT'S MILL

Location.—At single-span steel highway bridge, about four miles west of Woodlawn, at Moffatt's Mill, Beaver County.

Drainage Area.—178 square miles.

Records Available.—May 27, 1915, to September 30, 1923.

Gage.—Standard chain attached to downstream side of bridge; read to hundredths twice daily by Henry Schissler.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of rocks and rock shingle; permanent. Control is at a riffle about 100 feet downstream from the gage. Stage-discharge relation may be affected by vegetable growth at control section during summer months.

Extremes of Stage.—Maximum gage height during the year, estimated from hydrograph, 8.6 feet at 4 a. m. May 13; minimum, 1.60 feet from 7 p. m. October 4 to 7 a. m. October 7.

Ice.—Stage-discharge relation usually affected by ice.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh.

Daily Mean Gage Height, in feet, Raccoon Creek at Moffatt's Mill, for the year ending September 30, 1923.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.66	1.82	1.94	2.68	3.04	2.75	2.43	2.52	2.42	2.26	2.14	2.18
2	1.68	1.80	1.94	2.82	3.06	2.68	2.59	2.44	2.40	2.20	2.08	2.12
3	1.70	1.80	1.94	2.75	3.28	2.70	2.58	2.44	2.40	2.20	2.06	2.08
4	1.65	1.80	1.94	2.54	3.12	3.02	2.62	2.40	2.42	2.20	2.10	2.59
5	1.60	1.80	1.94	2.46	2.90	3.02	3.22	2.37	2.44	2.20	2.16	2.42
6	1.60	1.90	1.97	2.34	2.94	2.92	2.98	2.34	2.33	2.20	2.40	2.34
7	1.65	2.25	2.02	2.32	3.08	3.74	2.82	2.34	2.44	2.40	2.50	2.34
8	1.86	2.30	2.13	2.61	3.01	3.38	2.77	2.39	2.64	2.27	2.23	2.30
9	2.10	2.02	2.04	3.23	2.82	3.12	2.68	2.62	2.48	2.16	2.18	2.30
10	2.26	1.98	2.04	3.11	2.70	3.50	2.64	2.62	2.35	2.38	2.10	2.19
11	2.26	1.96	2.01	2.71	2.72	4.22	2.58	2.59	2.30	2.98	2.01	2.16
12	2.24	1.94	1.98	2.76	2.81	3.80	2.55	4.70	2.30	2.70	1.98	2.13
13	1.99	1.94	1.98	2.74	4.13	3.58	2.66	6.34	2.30	2.37	2.43	2.06
14	1.88	1.94	2.04	3.40	3.70	3.28	3.63	4.04	2.26	2.23	2.21	2.04
15	1.82	2.02	2.01	3.75	3.10	3.08	4.70	3.50	2.32	2.16	2.10	2.01
16	1.87	2.52	1.98	3.12	2.94	3.04	4.17	3.55	2.61	2.76	2.06	1.98
17	1.90	2.25	2.04	2.75	2.90	2.92	3.52	3.25	2.39	2.57	2.01	1.98
18	1.84	2.16	2.04	2.77	2.84	2.87	3.25	3.04	2.30	2.28	1.96	1.98
19	1.84	2.12	2.01	2.72	2.82	2.78	3.10	2.94	2.28	2.18	1.94	1.98
20	1.82	2.09	1.98	2.70	2.77	2.73	2.92	2.92	2.26	2.10	1.90	2.48
21	1.80	2.02	1.98	3.35	2.72	2.70	2.82	3.35	2.20	2.08	1.84	2.48
22	1.80	1.99	1.98	3.70	2.68	2.68	2.77	3.08	2.28	2.05	1.84	2.37
23	1.82	1.96	1.98	3.16	2.61	3.06	2.68	2.92	2.46	2.05	1.84	2.28
24	1.99	1.93	2.01	3.05	2.54	3.30	2.60	2.82	3.18	2.08	1.96	2.23
25	2.05	1.90	2.12	2.87	2.54	3.14	2.54	2.76	3.65	2.23	1.92	2.18
26	1.94	1.90	2.14	2.73	2.73	3.02	2.50	2.70	3.01	2.14	1.90	2.12
27	1.94	1.90	2.18	2.66	3.20	2.92	2.50	2.64	2.59	2.10	1.90	2.08
28	1.92	1.90	2.59	4.35	2.96	2.82	2.60	2.60	2.42	2.28	3.32	2.05
29	1.90	1.92	3.20	3.90	-------	2.78	2.71	2.56	2.50	2.64	3.24	2.02
30	1.84	1.94	2.60	3.30	-------	2.68	2.60	2.52	2.35	2.30	2.75	2.00
31	1.84	-------	2.56	3.06	-------	2.57	-------	2.47	-------	2.18	2.30	-------

TABLE NO. X.

Miscellaneous discharge measurements made during the year ending September 30, 1923.

Stream	Location	Date	Gage height	Discharge	Drainage area	Run-off Second-feet per Square Mile	Remarks
			Feet	Sec.-ft.	Sq. Mi.		
DELAWARE BASIN							
Lackawaxen River	Kimbles, Pike County	Aug. 17	----------	162	552	0.29	Made from highway bridge.
Lackawaxen River	Hawley, Wayne County	Aug. 17	.46	66.4	290	.23	Made at former gaging station.
SUSQUEHANNA BASIN							
Yellow Breeches Creek	Olmstead's Mill, Cumberland County	Oct. 3	.76	111	223	.50	Made at former gaging station.
Connodoguinet Creek	Brysons Bridge, Cumberland County	Oct. 4	2.37	108	460	.23	Made by wading 300 feet upstream from former gaging station.
Yellow Breeches Creek	Williams Grove, Cumberland County	Oct. 5	----------	78.6	165	.48	Data furnished by Gannett, Seelye & Fleming, Inc.
Swatara Creek	Near Jonestown, Lebanon County	Oct. 6	----------	56.7	291	.19	Made by wading 300 feet downstream from mouth of little Swatara Creek.
Fishing Creek	Near Seudsburg, Schuylkill County,	Oct. 7	----------	4.01	15	.27	Made by wading at High Bridge.
Rapid Run	Cowan, Union County	Oct. 9	----------	6.5	25.2	.26	Made from foot bridge.
Rapid Run	Near Cowan, Union County	Oct. 9	----------	4.5	21	.21	Made by wading at Forest House Bridge.
White Deer Creek	Near White Deer, Union County	Oct. 9	----------	7.8	31	.25	Made by wading upstream from White Deer Water Co. dam.
Spruce Run	Near White Deer, Union County	Oct. 9	----------	2.5	12.5	.20	Made by wading upstream from White Deer Water Co. dam.
Little Swatara Creek	Near Jonestown, Lebanon County	Oct. 26	----------	25.0	96	.26	Made by wading 300 feet downstream from 1st highway bridge above mouth
Swatara Creek	Jonestown, Lebanon County	Oct. 26	----------	55.1	190	.29	Made by wading 400 feet downstream from former gaging station.
Raystown Branch Juniata River	Near Saxton, Bedford Co	Dec. 5	----------	145	812	.18	Made about one mile downstream from Saxton at the Penn Central power station.
Penn's Creek	Near Ingleby, Centre County	June 15	----------	126	163	.77	Measurements furnished by Penna. State. College. Made ¾ mile upstream from Ingleby.
Penn's Creek	Near Ingleby, Centre County	June 21	----------	110	163	.67	
Penn's Creek	Near Ingleby, Centre County	June 27	----------	98	163	.60	
Yellow Breeches Creek	Williams Grove, Cumberland County	Sept. 16	----------	56.5	165	.34	Made by wading 200 feet upstream from Cold Spring Inn.
Yellow Breeches Creek	Williams Grove, Cumberland County	Sept. 16	----------	60.6	165	.37	Made by wading 10 feet downstream from Cold Spring Inn.
Yellow Breeches Creek	Olmsted's Mill, Cumberland County	Sept. 17	.70	92.3	223	.41	Made by wading 600 feet downstream from former gaging station.
Yellow Breeches Creek	Olmsted's Mill, Cumberland County	Sept. 17	.72	102	223	.46	
OHIO BASIN							
Mahoning River	Near New Castle, Lawrence County	Oct. 3	2.88	109	1,070	.10	Made at former gaging station.
Shenango River	Nashua, Lawrence County	Oct. 3	.79*	16.3	774	.02	Made by wading at Nashua Bridge, 7 miles upstream from New Castle.
Shenango River	Turnerville, Crawford County	Oct. 26	3.87	14.2	152	.09	Made by wading 200 feet downstream from former gaging station.

*New Castle gage.

TABLE NO. XI.

Summary of Run-off in second-feet per square mile, Run-off depth in inches, Precipitation and per cent Run-off to Precipitation, for the year ending September 30, 1923

Delaware Basin

Station	Drainage Area	Run-off in Second-feet per Square Mile													Run-off	Precipitation	Per Cent
		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Year	Depth in inches	Depth in inches	Run-off to Precipitation
Wallenpaupack Creek at Wilsonville	227	0.318	0.203	0.306	0.440	0.377	3.03	2.08	1.66	0.853	0.569	------	0.762	------	------	42.2	--------
Delaware River at Port Jervis, N. Y.	3,070	.381	.268	.329	1.45	.847	4.50	3.94	2.60	.853	.345	.375	.651	1.38	18.77	36.9	50.9
Bushkill Creek near Shoemakers	115	.254	.236	.349	1.65	.745	4.85	2.73	2.80	.710	.345	.306	.246	1.28	17.31	40.0	43.3
McMichaels Creek near Stroudsburg	62	.450	.410	.527	1.66	.676	4.63	1.84	2.16	.971	.552	.368	.245	1.21	16.49	38.3	43.1
Lehigh River at Tannery	335	.928	.478	.475	1.79	.728	5.28	2.70	2.99	1.05	1.51	.928	.806	1.65	22.40	41.7	53.7
Lehigh River at Bethlehem a	1,240	.601	.376	.408	1.10	.728	4.11	1.84	2.08	.756	.589	.476	.448	1.13	15.37	36.2	42.5
Delaware River at Riegelsville b	6,430	.429	.317	.327	1.27	.857	4.39	3.03	2 21	.767	.367	.344	.470	1.23	16.76	36.7	45.7
Little Schuylkill River at Tamaqua c	44	.384	.212	.398	1.20	.809	5.93	1.72	2.68	.920	.368	.277	.364	1.28	17.39	32.7	53.2
Schuylkill River at Reading d	900	.326	.259	.291	.903	.713	4.57	1.11	1.57	.446	.260	.210	.463	.932	12.67	33.7	37.6
Brandywine Creek at Chadds Ford	285	.379	.354	.421	1.03	1.24.	1.72	1.38	1.11	.649	.414	.705	.614	.832	11.30	36.7	30.8

a Run-off does not include the water diverted past the gage through the Lehigh Coal and Navigation Company Canal. Canal was closed Dec. 9 to Apr. 15.

b Run-off includes 230 second-feet, estimated quantity of water diverted past the gage through the Delaware Division of the Pennsylvania Canal. Canal was closed Dec. 14 to Feb. 26.

c Run-off includes the quantity of water diverted from the stream by the Panther Valley Water Company.

d Run-off does not include the water diverted past the gage through the Schuylkill Navigation Company Canal. Canal was closed Nov. 28 to June 15.

TABLE NO. XII.

Summary of Run-off in second-feet per square mile, Run-off depth in inches, Precipitation and per cent Run-off to Precipitation, for the year ending September 30, 1923.
Susquehanna Basin

Station	Drainage Area	Run-off in Second-feet per Square Mile													Run-off	Precipitation	Per Cent
		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Year	Depth in inches	Depth in inches	Run-off to Precipitation
North Branch Susquehanna River at Towanda	7,770	0.228	0.239	0.275	0.970	0.664	3.89	2.14	1.40	0.411	0.156	0.121	0.183	0.893	12.12	30.1	40.3
Towanda Creek near Monroeton	218	.071	.071	.080	.546	.628	3.28	.899	1.17	.268	.059	.052	.056	.601	8.15	29.2	27.9
Tunkhannock Creek at Dixon	398	.132	.101	.131	.903	.720	3.61	1.32	1.84	.224	.163	.235	.379	.817	11.08	34.5	32.1
Lackawanna River at Moosic	265	.475	.385	.453	1.33	.996	4.34	2.08	2.54	.838	.430	.472	.702	1.26	17.08	37.6	45.5
North Branch Susquehanna River at Wilkes-Barre	9,960	.207	.208	.247	.940	.661	3.53	1.92	1.54	.460	.162	.145	.190	.853	11.59	30.6	37.9
Wapwallopen Creek near Wapwallopen	46	.172	.134	.209	1.49	.809	3.80	1.24	2.26	.811	1.48	.622	.211	1.11	15.09	41.0	36.8
Nescopeck Creek near St. Johns	49	.337	.265	.359	1.32	.773	4.98	1.36	2.69	1.07	1.53	1.04	.310	1.35	18.28	40.8	44.8
Fishing Creek at Bloomsburg	355	.238	.086	.205	1.51	.75-	5.80	1.87	2.41	.355	1.81	.765	.546	1.37	18.65	38.5	48.4
North Branch Susquehanna River at Danville	11,200	.214	.208	.252	.946	.692	3.74	1.88	1.54	.449	.260	.190	.222	.886	12.04	31.6	38.1
West Branch Susquehanna River at Bower	320	.132	.157	.606	2.24	2.89	4.25	1.33	3.34	.331	.678	.888	.397	1.44	19.52	39.2	49.8
Clearfield Creek at Dimeling	370	.106	.107	.400	1.63	1.74	4.11	1.42	3.03	.468	.435	.465	.264	1.18	16.05	38.3	41.9
Driftwood Branch Sinnemahoning Creek at Sterling Run	270	.150	.160	1.01	1.91	1.43	6.15	1.61	4.52	.209	.097	.086	.115	1.47	19.87	36.1	55.0
West Branch Susquehanna River at Renovo	2,990	.191	.185	.338	1.25	1.58	5.02	1.44	3.48	.475	.234	.295	.208	1.22	16.68	35.5	47.0
Bald Eagle Creek at Milesburg	140	.290	.164	.696	1.21	1.13	4.66	1.09	3.04	.273	.793	.483	.455	1.20	16.28	35.0	46.5
Bald Eagle Creek at Beech Creek Station	565	.299	.237	.384	.901	.922	3.81	1.26	2.42	.519	.614	.434	.368	1.02	13.83	33.9	40.8
Pine Creek at Cedar Run	590	.145	.121	.175	.612	.663	3.75	1.47	2.07	.268	.081	.104	.093	.800	10.87	26.5	41.0
Lycoming Creek near Trout Run	185	.294	.199	.262	.957	.616	3.63	1.99	2.10	.402	.166	.164	.204	.919	12.48	29.2	42.7
West Branch Susquehanna River at Williamsport	5,670	.166	.141	.229	1.15	1.37	4.71	1.48	3.07	.473	.220	.240	.217	1.13	15.29	33.1	46.2
Frankstown Branch Juniata River at Williamsburg	295	.224	.230	.314	.746	1.25	2.64	1.91	1.68	.451	.444	.461	.308	.888	12.03	41.0	29.3
Raystown Branch Juniata River at Saxton	790	.133	.137	.219	.856	1.47	1.82	2.04	1.32	.435	.338	.419	.240	.780	10.60	42.4	25.0
Tuscarora Creek near Port Royal	205	.227	.153	.387	1.07	1.57	3.08	1.39	1.43	.463	.340	.205	.198	.873	11.87	38.3	31.0
Juniata River at Newport	3,380	.244	.165	.225	.790	1.30	2.73	1.46	1.64	.491	.426	.521	.367	.864	11.70	38.5	30.4
Susquehanna River at Harrisburg	24,100	.202	.176	.229	.884	.775	3.64	1.60	1.89	.494	.286	.280	.288	.892	12.14	33.7	36.0
Little Swatara Creek near Pine Grove	34	.612	.190	.412	1.60	2.18	4.56	1.15	1.33	.329	.145	.114	.647	1.10	14.97	35.0	42.8
Swatara Creek at Harpers	334	.359	.148	.353	1.50	1.24	4.37	1.05	1.31	.389	.220	.180	.725	.991	13.43	33.7	39.9

TABLE NO. XIII.

Summary of Run-off in second-feet per square mile, Run-off depth in inches, Precipitation and per cent Run-off to Precipitation, for the year ending September 30, 1923.
Ohio Basin

Station	Drainage Area	Run-off in Second-feet per Square Mile													Run-off	Precipitation	Per Cent
		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Year	Depth in inches	Depth in inches	Run-off to Precipitation
Brokenstraw Creek at Youngsville	290	0.270	0.609	1.45	2.67	1.60	5.45	1.90	2.50	0.462	0.288	0.314	0.291	1.50	20.29	35.7	56.8
Tionesta Creek at Butler Bridge a	420	.185	.374	1.25	3.05	1.50	5.33	1.45	2.55	.383	.156	.221				33.1	
Oil Creek near Rouseville	330	.196	.352	1.36	2.72	1.37	4.24	1.31	2.22	.327	.168	.156	.178	1.22	16.62	36.5	45.5
French Creek at Kimmeytown	207	.142	.507	1.14	2.90	1.71	5.31	1.88	1.31	.217	.111	.087	.098	1.29	17.47	32.6	53.6
French Creek at Saegertown	586	.133	.495	1.24	2.78	1.74	5.00	1.84	1.58	.282	.127	.096	.114	1.29	17.47	34.1	51.2
Cussewago Creek near Meadville	88	.032	.176	1.11	2.59	1.96	4.14	1.36	1.50	.099	.023	.014	.026	1.09	14.75	32.8	45.0
French Creek at Carlton b	1,000	.147	.355	1.13	2.88	1.74	4.41	1.58	1.46	.236	.107	.117	.134	1.19	16.18	34.4	47.0
Allegheny River at Franklin	6,010	.208	.368	.968	2.23	1.55	4.76	1.90	2.01	.408	.160	.151	.139	1.24	16.88	33.5	50.4
Clarion River near Clarion c	930	.197	.303	1.06	2.61	1.56	4.91	1.54	2.87	.474						36.2	
Red Bank Creek at Saint Charles	540	.136	.194	1.07	2.87	1.42	3.72	1.19	3.56	.350	.215	.152	.138	1.26	17.07	35.4	48.2
Mahoning Creek near Dayton	322	.135	.185	.584	2.60	2.06	2.89	1.35	3.00	.323	.661	.441	.211	1.20	16.35	36.1	45.3
Allegheny River at Kittanning	9,010	.162	.296	.896	2.54	1.59	4.93	1.75	2.41	.404	.178	.155	.132	1.29	17.54	34.1	51.4
Crooked Creek at Hileman's Farm	279	.032	.057	.595	3.35	1.66	2.50	1.05	3.01	.444	.123	.599	.284	1.24	16.83	42.6	39.5
Stony Creek at Johnstown d	468	.074	.080	.468	1.73	2.31	3.21	2.80	1.54	.581	.641	1.01	.434	1.24	16.74	44.1	38.0
Blacklick Creek at Blacklick	386	.110	.146	.580	2.48	1.89	2.88	1.72	2.80	.464	.412	.469	.482	1.20	16.34	42.5	38.4
Loyalhanna Creek at New Alexandria e	264	.226	.256	.697	2.53	2.40	2.68	2.38	2.19	1.14	1.36					44.4	
Kiskiminitas River at Avonmore	1,720	.180	.210	.558	2.56	2.41	3.16	2.38	2.57	.744	.849	.983	.628	1.43	19.44	43.9	44.3
Casselman River at Markleton	365	.096	.095	.532	2.46	3.07	3.07	2.99	1.41	.633	1.08	.403	.206	1.33	18.02	44.1	40.9
Laurel Hill Creek at Ursina	122	.125	.119	1.09	3.58	3.94	4.48	3.34	1.78	1.22	2.30	1.01	.515	1.95	26.44	44.0	60.1
Youghiogheny River at Connellsville	1,320	.114	.127	.879	3.11	3.30	3.04	2.88	1.43	.744	.947	.380	.227	1.43	19.36	43.6	44.4
Youghiogheny River at Sutersville	1,680	.108	.124	.893	2.62	2.90	2.67	2.82	1.33	.750	.929	.363	.220	1.30	17.67	42.2	41.9
Turtle Creek near Trafford	55	.255	.444	.442	2.09	1.82	2.38	1.43	2.45	.289	.275	.256	.522	1.05	14.29	38.7	36.9
Chartiers Creek at Carnegie	260	.130	.152	.201	1.24	1.49	2.04	2.07	1.70	.508	.382	.304	.317	.873	11.86	35.9	33.0
Shenango River near Jamestown	182	.071	.168	.519	2.14	1.23	2.93	1.08	1.12	.087	.033	.022	.054	.791	10.72	30.2	34.4
Little Shenango River at Greenville b	107	.061	.199	.852	2.32	1.64	2.33	1.07	1.61	.218	.074	.039				33.4	
Pymatuning Creek near Orangeville b	170	.046	.084	.337	1.06	1.10	2.41	.724	1.41	.156	.071	.054				30.6	
Shenango River at Sharon	611	.077	.138	.340	2.09	1.00	2.27	.887	1.06	.149	.067	.043	.092	.686	9.31	31.1	29.9
Shenango River at New Castle f	797	.047	.096	.261	1.88	.957	2.10	.838	1.10	.137	.047	.040	.053	.631	8.57	30.8	27.8
Neshannock Creek at Eastbrook Station b	235	.120	.393	.545	2.35	1.41	2.24	.702	1.65	.303	.120	.151				32.4	
Connoquenessing Creek near Hazen	355	.033	.057	.465	2.79	1.41	2.01	.862	2.07	.659	.112	.056	.060	.882	12.00	33.7	35.6
Slippery Rock Creek at Wurtemburg	404	.187	.262	.700	2.50	1.31	2.41	.797	1.80	.371	.236	.188	.207	.916	12.44	33.5	37.1

a Station discontinued Aug. 4, 1923.
b Station discontinued Aug. 31, 1923.
c Station discontinued June 30, 1923.
d Run-off includes the quantity of water diverted from the Quemahoning Reservoir.
e Station discontinued July 16, 1923.
f Run-off includes the quantity of water diverted from the stream at the New Castle Water Works.

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